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CHRISTIAN NAMES IN KUTENAI[1]

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1. Christian names today are in general use among all Kutenai bands. Only a few of the old people use tribal names constantly, others use them only on special tribal occasions, although most Kutenais have tribal names besides their Christian names.

The names used in this paper have been obtained from: the Upper Kutenai band at Cranbrook, British Columbia (CB); the Lower Kutenai bands at Elmo, Montana (E); Bonners Ferry, Idaho (BF); Creston, British Columbia (CS).

The phonemic shape of Kutenai Christian names quite definitely indicates the French origin of most of them. A smaller percentage of the names are loaned from English. French and English loans are treated together here, since the conditions of borrowing are almost identical.

[1] Data for this paper were gathered in the summer of 1946 on a field trip under a grant from the Penrose Fund of the American Philosophical Society, to which grateful acknowledgement is made.

The following informants were used (age figures are approximate). From Cranbrook—Mary Morigeau, 38; Nick Francis, 40; Joe Stanley, 55. From Elmo—Catherine Pierre, 18. From Bonners Ferry—Simon Francis, 45; Catherine Jackson, 34. From Creston—Louis Ernest, 40; Sam Pierre, 35. All informants from Cranbrook have been pupils of St. Eugene Mission School; of the other informants, only Simon Francis spent some time there.

2. The predominance of Christian names of French origin is easily explained by the fact that Christianity was introduced to the Kutenais by French-speaking Catholic Fathers: Father Jean-Pierre de Smet celebrated the first mass among the Kutenais in 1846, and French Fathers were active at St. Eugene Mission in Cranbrook until recently, although at present the priests there are English-speaking. An additional number of French loans can be found in Kutenai Catholic terminology; these additional loans conform, on the whole, to the same types of correspondences as do the loans examined in this paper. It is of some interest to note the somewhat old-fashioned and solemn character of the Christian names loaned from French, compared to the more easy-going English loans. Similarly, other English loans in Kutenai, of which there aren't too many, are of an everyday character and not restricted to any special field.

3. A geographic study of Christian names is of interest for two reasons. Dialect differences between bands are very slight as far as native sequences are concerned. Much greater dialect variation is found in the loans, where productive isoglosses can be drawn especially for the distribution of l as opposed to ɬ, and final stress as opposed to penultimate stress. The question of relative age of these dialectal variants, and the related question of centers of innovation, has to await a more thorough investigation of the general cultural influence of the Catholic mission and other factors of the surrounding white culture. On the other hand, the data which are here presented may possibly aid in such an analysis.

The following list contains all the forms obtained from all informants consulted, in the alphabetical order of their English equivalents. We localize our names here according to bands, which are abbreviated as explained above. In the remainder of the paper, cross reference may be made to this section for dialect differences.

Abel ʔa·pá·ɬ CB, BF, CS, ʔa·páɬ E; *Abraham* haplám CB, E, BF, hapɬám CS; *Adam* ʔatá·m CB, ʔa·tá·m E, BF, CS; *Adrian* ʔatɬiyán CB, BF, CS, ʔatliyán E; *Aeneas* niyás CB, E; *Agatha* ʔakat CB, E, ʔaká·t BF, ʔaka·t CS; *Agnes* ʔanyás CB, BF, ʔaniyás E, CS; *Alben* halpán CB, BF, ʔalpán E, hałpán CS; *Albert* = *Alben; Alice* ʔalis CB, E, CS, ʔałis BF; *Aloysius* ʔalwisis CB, BF, ʔaluwisis E, ʔałwisis CS; *Ambrose* ʔamló· CB, ʔa·mló· E; *Andrew* ʔantɬín CB, E, BF, CS; *Anna* ʔa·n CB, BF, ʔana CS; *Ann-Mary* ʔanma·lí CB, ʔanmałí E, ʔanmalí BF, ʔanma·ɬí CS; *Anthony* ʔatuwán CB, ʔatwán BF, CS.

Barnaby palnapí CB, E, CS, palnapí BF; *Basil* pa·síɬ CB, E, BF, CS; *Bridget* pilisít CB, BF, piɬisít E, CS, short: pili CB, pilis BF.

Camillus ka·mɬí CB, E, BF, CS; *Casimir* ka·smɬí CB, CS, ka·smíl E, ka·smí BF; *Catherine* katɬín CB, E, BF, CS; *Cecilia* si?sɬí CB, BF, CS, sisɬí E; *Charles* ča·lí CB, BF, CS, ca·lí E; *Christine* kilistín CB, klistín CB, BF, kɬistín E, CS; *Christopher* kustatá CB, kusta·tá CB, E, BF, CS; *Clara* klala CB, E, BF, CS, kɬała BF, CS.

David tawít CB, E, BF, CS, and yawít CS; *Dominick* tumné·k CB, tumník E, BF, CS.

Edward ʔitwáɬ CB, E, BF, CS, ʔe·twáɬ CB; *Elizabeth* nisapáɬ CB, BF, CS, nisapá·ɬ BF, CS, nisa E, and hilisapá CB, short: hili, and ɬisát CB, E, BF, CS, ɬisá·t BF, CS; *Ernest* ʔanasta CB, E, BF, CS; *Eugene* husán CB, ho·sán CB, CS, ʔusán BF, ʔo·sán CS; *Eugenia* ʔo·sní CB, E, BF, CS, ʔo·sa·ní CB, ʔusní BF.

Fabian pa·pyán CB, E, BF, pa·piyan CS; *Felicitas* = *Bridget; Francis* pilaswá CB, BF, pla·swá CB, plaswá CB, ła·swá E, piłaswá BF, piła·swá CS, pła·swá CS, short: ła·swá CB.

Gabriel kapɬiyán CB, E, BF, CS, kapliyán CB; *Gregory* klikwán CB, kli?kwan E, kɬikwán BF, kɬi?kwan CS.

Harry ha·lé· CB, ha·lí E, BF, CS; *Helen* ʔe·lán CB, ʔalán E, ʔa·lá·n BF, CS, ʔa·ɬán CS; *Howard* ha·wít E, CS, hawít BF.

Ignatius niyás CB, BF, CS; *Isaac* ʔisá·k CB, BF, ʔi?sá·k CB, ʔaysá·k E, BF, CS, ʔiysá·k CS; *Isabel* nisa CB, E, hilisapá BF; *Isidore* ʔisitó·ɬ CB, E, BF, CS, se·tó·ɬ CB.

Jacob sa·kó·p CB, sakum E, BF, CS, short: sako· CB; *Jesus* si?si CB, sisi E, se·?si BF, CS; *John* ca·n CB, E, BF, CS, ča·n BF, CS; *John-Baptist* ca·npacis CB, E, sanpacis CB, BF, CS; *Johnny* ca·ní CB; *Joseph* susáp CB, E, BF, CS, so·sáp CB; *Josephine* susapín CB, BF, CS, so·sa·pín CB, susa·pín E; *Judith* susít CB, E, so·sít CB, suta CB, CS; *Julia* sulyán CB, E, suliyán CB, E, sułí BF, sułiyán CS, so·liyán CS; *Julian* culiyán CB, E, BF; *Justin* yustán CB, BF, CS.

Leo hilyúm CB, E, liyu BF, CS; *Louis* hilwé· CB, E, BF, hiłwé· CS, hiłwíy CS, ło·wí CB, BF, CS; *Louise* lalwíst CB, BF, lalwís E, and hiłwís E, hilwís BF, hiłwisa CS; *Lucian* łusyán CB, BF, ło·syán CS; *Lucy* lusí CB, E, BF, CS, lo·sín CB; *Luke* ło·k CB, CS, łuk E, BF, CS, ło·?k BF.

Magdalen matɬán CB, E, BF, CS; *Margaret* makɬít CB, E, BF, CS; *Mark* ma·k CB, E, BF; *Martin* małta CB, E, BF, CS; *Mary* ma·lí CB, E, BF, CS; *Mary-Lucy* mallusí CB, mallusín CB, E, BF, małłusín CS; *Martha* ma·łt CB, E, ma·tís BF, ma·tis CS; *Matthew* maliws CB, E, BF, CS, małyus CB; *Maurice* mulis CB, E, mułís BF, mo·łís CS; *Melchior* malkyus CB, malkiws E, malkiw BF, małki CS; *Michael* misá·ɬ CB, BF, CS, misáł E, BF; *Mike* mayk CB; *Monica* mo·ník CB, E, BF, CS; *Moses* mo·yís CB, E, muyís BF, CS.

Nicholas nukalá CB, nukałá E, CS, nikwalá BF.

Pascal pa·skáɬ CB, paskáɬ E; *Pat* pa·t

CS; *Patrick* pa·tlé·k CB, patɬík E, pa·tɬík BF, CS; *Paul* po·ł CB, E, BF, CS; *Pauline* po·lín CB, E, po·ɬí BF, CS; *Peter* pyał CB, piyál CB, piyáł E, BF, CS; *Phillip* pilíp CB, BF, piɬíp E, CS; *Phyllis* = *Bridget.*

Robert laput CB; *Rosalie* so·salít CB, ʔulu E, susalít BF, so·salɬít CS; *Rose* lo·s CB, lus E, ło·s BF, CS; *Rosie* ło·sí CB, BF, CS, ʔo·sa E.

Sam sa·m E, BF, CS; *Samuel* samwáł CB, E, BF; *Sabina* sa·pín CB, sapín E; *Sara* sa·la· CB, sala CB, E, BF, sa·ła CS; *Stanislas* stanisłá CB, E, CS, stanasłá BF; *Stanley* See *Stanislas; Susan* susán CB, E, BF, CS, so·sán CB; *Suzette* susít CB, so·sá·t CS.

Terry ta·ɬí CB, E, BF, CS; *Thomas* tuma CB, E, BF, CS, tumá CB.

Urban hulpán CB, E, BF, huɬpán CS.

Victor miktó·ł CS.

William hulyám CB, E, BF, huɬiyám BF, huliyám CS, huɬiyam CS.

4. Phonemes of Kutenai exclusive of Christian names are: consonants p, t, k, q, ʔ, c, s, x, h, m, n, ł; syllabic vowels a, u, i, and a·, o·, e·; nonsyllabic vowels w, y[2]. u has allophones u and o under certain conditions. These conditions vary somewhat among the various bands. Stress in native Kutenai words is penultimate.

5. Christian names present several additional segmental and suprasegmental phonemes.

The most important of these is final stress, which in Kutenai occurs only in loanwords. Finally-stressed loanwords can therefore be treated as a separate lexical layer and described apart. Penultimate stress of native Kutenai sequences could then be considered non-phonemic. It is also possible to consider Kutenai inclusive of finally-stressed loans as one non-stratified language, in which case stress, then both pre-final and final, has to be considered phonemic.[3] In this paper, stress marks are used to indicate final stress; where no stress mark is used, the stress is penultimate.

Final stress is found in most all French loans, e.g. anyás, aniyás < Fr. aɲɛs *Agnes;* susalít, so·salɬít CS < Fr. rozali *Rosalie;* so·sáp, susáp < Fr. zozɛf *Joseph;* ma·ɬí < Fr. mari *Mary.*

By analogy, final stress is extended to a number of English loans: ča·ɬí, ca·ɬí < Eng. čárliy *Charles;* ʔaysá·k < Eng. áyzək *Isaac;*[4] pa·tlé·k, patɬík, pa·tɬík < Eng. pǽtrik *Patrick;* nisapáł, nisapá·ł < Eng. iylízəbeθ *Elizabeth;* ha·wít, hawít < Eng. háwərd *Howard;* ca·ní < Eng. ǰániy *Johnny;* ha·lé·, ha·ɬí < Eng. hǽriy *Harry;* ta·ɬí < Eng. tériy *Terry;* hulyám, huɬiyám < Eng. wílyəm *William.*

On the other hand, some French loans show penultimate stress: ʔanasta < Fr. ɛrnɛstə *Ernest;* kliʔkwan, kɬiʔkwan < Fr. greguarə *Gregory;* ʔakat, ʔaka·t < Fr. agatə *Agatha;* tuma < Fr. toma *Thomas;* pa·piyan < Fr. fabiɛn *Fabian.* In the first example, Kutenai stress conforms to the French original, and penultimate stress results from the preservation of final ə as Kutenai a. In the other examples, stress is assimilated to the native pattern.[5]

In one case, an English loan has penultimate stress where the English original is stressed on the first syllable: huɬiyam > Eng. wílyəm *William.*

Segmental phonemes found in Christian names only are l and č, e.g. pilaswá, pla·swá,

[2] w and y are considered non-syllabic vowels rather than semi-vowels for various not only phonemic, but also morphological reasons, such as the occurrence of non-syllabic vowels as morphophonemic alternants of syllabic vowels in certain positions.

[3] For a more elaborate discussion of a similar problem, see William L. Wonderly, Phonemic Acculturation in Zoque, IJAL 12.92–5 (1946).

[4] This form is probably a contamination of Fr. izak and Eng. áyzək. Forms based on the French form only are also found: ʔiʔsá·k, ʔisá·k, ʔiysá·k.

[5] Finally-stressed forms derived from greguarə, agatə, toma, and fabiɛn, are also found: klikwán, kɬikwán; aká·t; tumá; pa·pyán.

plaswá < Fr. fransua *Francis*, haplám < Fr. abram *Abraham;* ʔalis < Eng. ǽlis *Alice;* hulyám, huliyám < Eng. wílyəm *William;* klala < Eng. klɛ́rə *Clara;*— ča·n < Eng. ǰan *John;* ča·ĺí < Eng. čárliy *Charles.*[6]

6. Phonetic correspondences between French or English originals and Kutenai loanwords show a considerable degree of regularity. Phonemes occurring both in French and English most often correspond to the same phoneme in Kutenai loanwords, irrespective of origin.

6.1. Consonants. Stops, spirants, nasals, l, prevocalic and intervocalic r, occurring both in French and English correspond to phonemes in Kutenai irrespective of their origin. Postvocalic r has different correspondences in Kutenai depending on its French and English origin respectively.[7] Individual correspondences are:

Stops.

Voiceless stops > voiced stops. b > p: Fr. abɛl > ʔa·pá·ł, ʔa·pát *Abel;* Fr. abram > haplám, hapłám *Abraham;* Fr. žakɔbə ∧ sa·kó·p *Jacob;* Eng. ǰan bɛ́ptist > ca·npacis, sanpacis *John Baptist;* Fr. gabriɛl > kapliyán, kapłiyán *Gabriel;* Eng. rábərt > laput *Robert;* Fr. albɛn or albɛr > halpán, ʔalpán, hałpán *Alben, Albert*[8]; Fr. yrbɛn > hulpán, hułpán *Urban;* Fr. barnabe > pałnapí, palnapí *Barnaby;* Eng. iylízəbeθ > nisapáł, nisapá·ł *Elizabeth;* Fr. elizabɛt > hilisapá *Elizabeth, Isabel;* Fr. bazilə > pa·síł *Basil;* Fr. fabiɛn > pa·pyán, pa·piyan *Fabian;* Fr. sabinə > sa·pín, sapín *Sabina.*

d > t: Fr. madlɛnə > matłán *Magdalen;* Fr. izidɔrə > se·tó·ł, ʔisitó·ł *Isidore;* Fr. adriɛn > ʔatliyán, ʔatliyán *Adrian;* Fr. dominikə > tumné·k, tumník *Dominick;* Fr. eduar > ʔe·twáł, ʔitwáł *Edward;* Fr. andre > ʔantlín *Andrew;* Eng. háwərd > ha·wít, hawít *Howard;* Fr. david > tawít, yawít *David.* g > k: Fr. gabriɛl > kapliyán, kapłiyán *Gabriel;* Fr. greguarə > klikwán, kliʔkwan, kłikwán kliʔkwan, *Gregory;* Fr. agatə > ʔakat, ʔaká·t, ʔaka·t *Agatha;* Fr. margəritə > maklít, maklít *Margaret.*

Spirants.

Voiced spirants > voiceless spirants. z > s: Fr. rɔzali > so·salít, susalít BF *Rosalie;* Eng. ǰiyzəs > siʔsi, sisi, seʔsi *Jesus;* Fr. izak > ʔiʔsá·k, ʔisá·k, ʔiysá·k CS *Isaac;* Eng. áyzək, Fr. izak > ʔaysá·k *Isaac;* Fr. mɔizə > mo·yís, muyís *Moses;* Fr. izidɔrə > se·tó·ł, ʔisitó·ł CS *Isidore;* Fr. syzanə > so·sán, susán *Susan;* Fr. luizə > hiłwís, hilwís, hiłwisa *Louise;* Eng. iylízəbeθ > nisapáł, nisapá·ł *Elizabeth;* Fr. elizabɛt > hilisapá *Elizabeth, Isabel;* Fr. lizɛtə > łisát, łisá·t *Elizabeth;* Fr. žɔzefinə > so·sa·pín, susapín, susa·pín *Josephine;* Fr. syzɛtə > susít, so·sít, so·sá·t *Judith, Suzette;*[9] Fr. bazilə > pa·síł *Basil;* Fr. rɔzə > lo·s, lus, łoˑs *Rose;* Fr. kazimir > ka·smíł, ka·smíl, ka·smí *Casimir;* Fr. žɔzɛf > so·sáp, susáp *Joseph.*

Hushing sibilants > hissing sibilants. š > s: Eng. ælóíšəs > ʔalwisis, ʔaluwisis, ʔałwisis CS, *Aloysius;* Fr. mišɛl > misáł, misá·ł *Michael.*

Voiced hushing sibilants > voiceless hissing sibilants. ž > s: Fr. žɔzɛf > so·sáp, susáp, *Joseph;* Fr. žakɔbə > sa·kó·p, sakó· *Jacob;* Fr. øžɛnə > ho·sán, husán, ʔusán, ʔo·sán *Eugene;* Fr. žyli > sułí *Julia;* Fr. žyliɛnə > sulyán, suliyán, sułiyán, so·łiyán *Julia;* Fr. žɔzefinə > so·sa·pín, susapín, susa·pín *Josephine;* Fr. øženi > ʔo·sa·ní, ʔo·sní, ʔusní *Eugenia;* Fr. žystinə > sustín, so·stín *Justinia;*.[9]

[6] Forms with both loaned l and native ł, loaned č and native c, are found. They will be discussed more fully in the analysis of individual sound correspondences further below.

[7] This seems to be easily explained by the different phonetic shape of postvocalic r in French and English.

[8] Both albɛn and albɛr are possible etymologies, since dissimilation of l, r > n occurs elsewhere in Kutenai loans, and since both *Alben* and *Albert* have been given as translations of the Kutenai forms.

[9] Forms ending in it are probably contaminations of Fr. syzɛtə and žydit.

Other changes. f > p: Fr. žɔzɛf > so·sáp, susáp *Joseph;* Fr. fransua > pilaswá, pla·swá, plaswá, piłaswá, piła·swá *Francis;* Fr. felisite > pilisít, piłisít *Phyllis, Felicitas, Bridget;*[10] Eng. fílis > pilis *Phyllis;* Fr. žɔzefinə > so·sa·pín, susapín, susa·pín *Josephine;* Fr. filipə > pilíp, piłíp *Phillip;* Fr. sofi > so·pí, supí *Sophie;* Fr. fabjɛn > pa·pyán, pa·piyan *Fabian.* θ > ł: Eng. mæθyuws > maɬiws, maɬyus *Matthew;* Eng. iylizəbeθ > nisapáɬ, nisapá·ɬ *Elizabeth.* v > w: Fr. david > tawít, yawít *David.* v > m: Fr. viktɔr > miktó·ɬ *Victor.* ž > y: Fr. žystɛn > yustán *Justin.*[11]

Affricates.

š > s: Eng. šiyzəs > si?si, sisi, se·?si *Jesus;* Eng. šan bæptist > sanpacis *John Baptist.* š > c: Eng. šan bæptist > ca·npacis *John Baptist;* Eng. šúwlyən, Fr. žyljɛn > cuɬiyán *Julian;*[12] Eng. šan > ca·n *John;* Eng. šániy > ca·ní *Johnny.* š > č: Eng. šan > ča·n *John.* č > c: Eng. čárliy > ca·ɬí *Charles.*

Liquids.

l remains: Fr. rɔzali > so·salít, susalít *Rosalie;* Fr. filipə > pilíp *Phillip;* Fr. luizə > hilwís *Louise;* Eng. klɛ́rə > klala *Clara;* Fr. lui > hilwé· *Louis;* Fr. polinə > po·lín *Pauline;* Eng. wílyəm > hulyám, huliyám *William;* Eng. ǽlis > ?alis *Alice;* Eng. æloíšəs > ?alwisis, ?aluwisis *Aloysius;* Fr. lysi > lusí, lo·sín *Lucy;* Fr. albɛn or albɛr > halpán, ?alpán *Alben, Albert;*[8] Fr. felisite > pilisít *Phyllis, Felicitas, Bridget;*[10] Eng. fílis > pilis *Phyllis*; Eng. mélkyər > malkyus, malkiws, malkiw *Melchior;* Fr. nikɔla > nukalá, nikwalá *Nicholas;* Fr. elenə > ?e·lán, ?alán *Helen;* Fr. elizabɛt > hilisapá *Elizabeth, Isabel;* Fr. leon > hilyúm *Leo;* Fr. žyljɛnə > suliyán, sulyán *Julia.*

l > ɬ: Fr. rɔzali > so·salít *Rosalie;* Fr. pɔl > po·ɬ *Paul;* Fr. abɛl > ?a·pá·ɬ, ?a·páɬ *Abel;* Fr. madlenə > matɬán *Magdalen;* Eng. čárliy > ča·ɬí, ca·ɬí E *Charles;* Eng. luwk > ło·k, ło·?k *Luke;* Fr. lyk > łuk *Luke;* Fr. filipə > piłíp *Phillip;* Fr. luizə > hiłwís, hiłwisa *Louise;* Fr. lui > hiłwé·, hiłwíy, > ło·wí *Louis;* Fr. polinə > po·ɬí *Pauline;* Fr. stanisla > stanisłá, stanasłá *Stanislas, Stanley;* Fr. lizɛtə > łisát, łisá·t *Elizabeth;* Eng. ǽlis > ?aɬis *Alice;* Fr. žyljɛnə > suɬiyán, so·ɬiyán *Julia;* Fr. žyli > suɬí *Julia;* Fr. albɛn or albɛr > haɬpán *Alben Albert,*[8] Eng. æloíšəs > ?aɬwisis *Aloysius;* Fr. elenə > ?a·łá·n *Helen;* Fr. lysi > łusí *Lucy;* Fr. mišɛl > misá·ɬ, misáɬ *Michael;* Fr. nikɔla > nukaɬá *Nicholas;* Fr. samyɛl > samwáɬ *Samuel;* Eng. šúwlyən Fr. žyljɛn > cuɬiyán *Julian;*[12] Fr. lysjɛn > łusyán, ło·syán *Lucian;* Fr. kamilə > ka·míɬ *Camillus;* Eng. klɛ́rə > kłała *Clara;* Fr. bazilə > pa·síɬ *Basil;* Fr. sesilə > si?síɬ, sisíɬ *Cecilia;* Eng. líyow > łiyu *Leo;* Eng. wílyəm > huɬiyám, huɬiyam CS *William.*

Prevocalic and intervocalic r > l: Fr. fransua > pilaswá, pła·swá, plaswá *Francis;* Fr. abram > haplám *Abraham;* Eng. sɛ́rə > sala, sa·la· CB *Sara;* Eng. klɛ́rə > klala *Clara;* Fr. mɔrisə > mulis, mulís *Maurice;* Fr. margəritə > maklít *Margaret;* Eng. rábərt > laput *Robert;* Fr. kristinə or Eng. kristíyn > klistín, kilistin *Christine;* Fr. gabriɛl > kapliyán *Gabriel;* Fr. adriɛn > ?atliyán *Adrian;* Fr. pjɛrə > piyá·l *Peter;* Eng. pætrik > pa·tlé·k *Patrick;* Fr. greguarə > klikwán, kli?kwan *Gregory;* Fr. anəmari > anma·lí *Ann-Mary;* Eng. hǽriy > ha·lé· *Harry;* Fr. rɔzə > lo·s, lus *Rose;* Fr. ambrɔzə > ?amló·, ?a·mló· *Ambrose.*

Prevocalic and intervocalic r > ɬ: Fr. pjɛrə > pyaɬ, piyá·ɬ, piyáɬ *Peter;* Fr. mari

[10] The etymology is here somewhat uncertain, since one would expect something like *pilisití, or *piłisití, from Fr. felisite. All three translations have, at one time or another, been given by various informants.

[11] Initial y differentiates here, together with the contrast in vowels, yustán, *Justin* from sustín, so·stín *Justinia.*

[12] It is interesting to note here that initial c differentiates cuɬiyán *Julian* from suliyán, suɬiyán *Julia.*

> ma·ɬí *Mary;* Fr. fransua > ła·swá, piłaswá, piła·swá, pła·swá *Francis;* Fr. abram > hapɬám *Abraham;* Fr. gabriɛl > kapɬiyán *Gabriel;* Fr. izidərə > se·tó·ł, ʔisitó·ł *Isidore;* Fr. adriɛn > ʔatɬiyán *Adrian;* Eng. sɛ́rə > sa·ła *Sara;* Fr. mərisə > mo·łís *Maurice;* Fr. katerinə > katɬín *Catherine;* Fr. margəritə > makɬít *Margaret;* Fr. kristinə or Eng. kristíyn > kɬistín *Christine;* Eng. pætrik > patɬík, pa·tɬík *Patrick;* Fr. andre > ʔantɬín *Andrew;* Fr. greguarə > kɬikwán, kɬi?kwan *Gregory;* Fr. anəmari > ʔanmaɬí, ʔanma·ɬí *Ann-Mary;* Eng. hɛ́riy > ha·ɬí *Harry;* Eng. klɛ́rə > kɬała *Clara;* Fr. rɔzə > ło·s *Rose;* Eng. tériy > ta·ɬí *Terry.*

Postvocalic r. French postvocalic r predominantly corresponds to Kutenai l or ɬ, in some cases it is dropped. English postvocalic r results in Kutenai in the lengthening of preceding a: ar > a·. English ər is shortened to u, w, i, or drops altogether. In one case, English postvocalic r corresponds to Kutenai ɬ.

French postvocalic r > l: yrbɛn > hulpán *Urban;* barnabe > palnapí *Barnaby;* kazimir > ka·smil *Casimir.* French postvocalic r > ɬ: martə > ma·ɬt *Martha;* yrbɛn > hułpán *Urban;* barnabe > pałnapí *Barnaby;* viktər > ɱiktó·ɬ *Victor;* eduar > ʔe·twáɬ, ʔitwáɬ *Edward;* kazimir > ka·smíɬ *Casimir.* French postvocalic r > ∅: margəritə > makɬít, maklít *Margaret;* ɛrnɛstə > ʔanasta *Ernest;* kazimir > ka·smí *Casimir.*

English ar > a·: čárliy > ča·ɬí, ca·ɬí *Charles;* mark > ma·k *Mark.* English ər > u: mélkyər > malkyus *Melchior;* rábərt > laput *Robert.* English ər > w: mélkyər > malkiws, malkiw *Melchior.* English ər > i: háwərd > ha·wít, hawít *Howard.* English ər > ∅: mélkyər > małki *Melchior.* English postvocalic r > ɬ: mártən > małta *Martin.*

Intrusive vowel. i between stop and liquid in initial clusters: Fr. kristinə or Eng. kristíyn > kilistín *Christine;* Fr. fransua > pilaswá, piłaswá, piła·swá *Francis.*

Dissimilation. Medial liquid has not been found in Christian names together with initial liquid and/or final liquid.[13] Where medial liquid and initial and/or final liquid occur together in French or English cognates or where two such liquids would be the result of "regular" phonetic correspondence, initial or final liquid has been found to be dissimilated in Kutenai. Most examples show n for original liquid, one case shows s.

l > n: Fr. gabriɛl > kapliyán, kapɬiyán *Gabriel;* Eng. iylízəbeθ > nisapáɬ *Elizabeth.* r > n: Fr. albɛn or albɛr > halpán, ʔalpán, hałpán *Alben, Albert;*[8] Fr. greguarə > klikwán, kli?kwan, kɬikwán, kɬi?kwan *Gregory.* r > s: Fr. rɔzali > so·salít, sosalít, so·saɬít *Rosalie.*[14]

Nasals.

m of both French and English corresponds to the same phoneme in Kutenai, so does initial and intervocalic n. French postvocalic n (phonetically forming a nasal vowel with the preceding vowel) will be treated under the vowels, so will English ən; other instances of English postvocalic n have not been found. English ŋ has not been found in any of the cognates. French ŋ corresponds to Kutenai ny or niy.

ɲ > ny: aɲɛs > ʔanyás *Agnes.* ɲ > niy: aɲɛs > ʔaniyás *Agnes.* Inversion: iɲ > niy: iɲasə > niyás *Ignatius, Aeneas.*[15]

6.2. Vowels. Correspondences of French and English vowels will be considered separately, since they vary more according to origin than do consonant correspondences. French nasal vowels (phonemically vowel

[13] Two medial liquids have been found together: klala, kɬała < klærə *Clara.*

[14] This case can as well be considered an instance of assimilation of initial r to the next consonant.

[15] This form might also be interpreted as derived from éynyəs, although it rather seems to me that *Aeneas* is a re-translation from Kutenai niyás.

+ n), and English ən and falling diphthongs will also be treated in this section. Although in most cases no correlation could be found between Kutenai vowel length and any feature in French or English, short and long Kutenai cognates will be listed separately.

French vowels.

a corresponds to a or a·.

a > a, e.g.: david > tawít *David;* gabriel > kapliyán, kapłiyán *Gabriel.* a > a·: abɛl > ʔa·pá·ł, ʔa·pál E *Abel;* adam > ʔatá·m, ʔa·tá·m *Adam;* anə > ʔa·n *Anna;* izak > ʔi?sá·k, ʔisá·k, ʔiysá·k *Isaac;* žakəbə > sa·kó·p *Jacob;* mari > ma·lí *Mary;* anəmari > ʔanma·lí, ʔanma·łí *Ann-Mary;* kamilə > ka·míł *Camillus;* sabinə > sa·pín *Sabina;* bazilə > pa·síł *Basil;* agatə > ʔaká·t, ʔaka·t *Agatha;* fabjɛn > pa·pyán, pa·piyan *Fabian;* kazimir > ka·smíł, ka·smíl, ka·smí *Casimir;* ambrəzə > ʔa·mló· *Ambrose;* paskal > pa·skáł *Pascal.*

o, ɔ, ø, u, and y coalesce into Kutenai u, or o·.[16] In certain examples, u and y correspond to Kutenai w.

o > u: toma > tuma *Thomas;* sofi > supí CS *Sophie.* o > o·: polinə > po·lín, po·lí *Pauline;* sofi > so·pi *Sophie;* monikə > mo·ník *Monica.* ɔ > u: rəzali > susalít *Rosalie;* žəzef > susáp *Joseph;* məizə > muyís *Moses;* mərisə > mulis, mulís *Maurice;* dəminikə > tumne·k, tumník *Dominick;* žəzefinə > susapín, susa·pín *Josephine.* ɔ > o·: izidərə > se·tó·ł, ʔisitó·ł *Isidore;* zəzef > so·sáp *Joseph;* zəzefinə > so·sa·pín *Josephine;* mərisə > mo·łís *Maurice;* məizə > mo·yís *Moses;* pəl > po·ł *Paul;* rəzali > so·salít, so·sałít *Rosalie;* rəzə > lo·s, ło·s *Rose;* ambrəzə > ʔamló·, ʔa·mló· *Ambrose;* viktər > miktó·ł *Victor;* žakəbə > sako·, sa·kó·p *Jacob.* ø > u: øžɛnə > husán, ʔusán *Eugene;* øženi > ʔusní *Eugenia.* ø > o·: øžɛnə > ho·sán, ʔo·sán *Eugene;* øženi > ʔo·sa·ní, ʔo·sní *Eugenia.* u > o: lui > ło·wí *Louis.* y > u: yrbɛn > hulpán, hułpán *Urban;* syzanə > susán *Susan;* syzɛtə > susít *Judith, Suzette;*[9] žyli > sułí *Julia;* žyljɛnə > suliyán, sulyán, sułiyán *Julia;* lysi > lusí, łusí *Lucy;* Eng. ǯuwlyən, žyljɛn > cułiyán *Julian;*[12] lysjɛn > łusyán *Lucian;* lyk > łuk *Luke;* žystinə > sustín *Justinia;* žystɛn > yustán *Justin.*[11] y > o·: syzɛtə > so·sít, so·sá·t *Judith, Suzette;*[9] lysi > lo·sín *Lucy;* syzanə > so·sán *Susan;* žyljɛnə > so·łiyán *Julia;* lysjɛn > ło·syán *Lucian.* u > w: antuanə > atwán *Anthony;* eduar > ʔe·twáł, ʔitwáł *Edward;* fransua > plaswá, pilaswá, ła·swá, piłaswá, piła·swá *Francis;* lui > hiłwé·, hiłwé·, hiłwíy *Louis;* greguarə > klikwán, kli?kwan, klikwán, kli?kwan *Gregory.* y > w: samyɛl > samwáł *Samuel.*

French e and ɛ are differentiated in Kutenai loans. The former corresponds to Kutenai i or i?, or e·, the latter to a or a·. The regularity of these correspondences is in some instances broken up by assimilation or analogy formations.

e > i: eduar > ʔitwáł *Edward;* barnabe > palnapí, palnapí *Barnaby;* andre > ʔantlín *Andrew;* greguarə > klikwán, klikwán *Gregory;* sesilə > sisíł *Cecilia;* elizabɛt > hilisapá *Elizabeth, Isabel.* e > i?: greguarə > kli?kwan, kli?kwan *Gregory;* sesil > si?síł, *Cecilia.* e > e·: eduar > ʔe·twáł *Edward;* elenə > ʔe·lán *Helen.* ɛ > a: apɛs > ʔanyás, ʔaniyás *Agnes;* pjɛrə > pyał, piyáł *Peter;* žəzef > so·sáp, susáp *Joseph;* abɛl > ʔa·pál *Abel;* madlenə > matlán *Magdalen;* øženə > ho·sán, husán, ʔusán, ʔo·sán *Eugene;* gabriel > kapliyán, kapłiyán *Gabriel;* lizɛtə > łisát, *Elizabeth;* mišɛl > misáł *Michael;* elenə > ʔe·lán, ʔalán, ʔa·lán *Helen;* žyljenə > suliyán, sulyán, sułiyán, so·łiyán *Julia;* elizabɛt > hilisapá *Elizabeth, Isabel;* samyɛl > samwáł *Samuel;* ernestə > ʔanasta *Ernest.* ɛ· > a·: pjɛrə > piyá·l, piyá·ł *Peter;* abɛl > ʔa·pá·ł *Abel;* lizɛtə > łisá·t *Elizabeth;* mišɛl > misá·ł *Michael;* elenə

[16] Only one example of u > o· has been found, none of u > u. This can be considered accidental and due to the infrequency of u in the French cognates in positions where correspondence with u or o· in Kutenai could be expected.

> ʔa·lá·n *Helen;* syzɛtə > so·sá·t *Judith, Suzette.*

Assimilation: e > a, a·: elɛnə > ʔalán, ʔa·lá·n, ʔa·łán *Helen.* Analogy: e > a, a·: øženi > ʔo·sa·ní *Eugenia* (cf. ho·sán, husán < øžɛnə *Eugene*); žɔzefinə > so·sa·pín, susapín, susa·pín *Josephine* (cf. so·sáp, susáp < žɔzef *Joseph*).

French i non-adjacent to vowels corresponds to Kutenai i, iy, iʔ or e·, e·ʔ. As members of rising diphthongs, French į corresponds to Kutenai y or iy, i to Kutenai iy.[17]

i > i, e.g.: lizɛtə > łisát, łisá·t *Elizabeth;* mari > ma·łí *Mary.* i > iy: izak > ʔiysák *Isaac;* lui > hiłwíy *Louis.* i > iʔ: izak > ʔiʔsák *Isaac.* i > e·: dɔminikə > tumne·k *Dominick;* izidɔrə > se·tó·ł *Isidore;* lui > hiłwé·, hiłwé· *Louis;* simon > se·mó· *Simon.* i > e·ʔ: simon > se·ʔmó· *Simon.* į > y: pįɛrə > pyáł *Peter;* zyljɛnə > sulyán *Julia;* lysjɛn > łusyán, ło·syán *Lucien;* fabjɛn > pa·pyán *Fabian.* į > iy: pįɛrə > piyá·l, piyá·ł *Peter;* žyljɛnə > suliyán, so·liyán *Julia;* Eng. žúwlyən, žyljɛn > culiyán *Julian;*[12] fabjɛn > pa·piyan *Fabian.* i > iy: adrɪɛn > ʔatłiyán, ʔatliyán *Adrian;* gabriɛl > kapliyán, kapłiyán *Gabriel.*

In one case of assimilation, French i corresponds to Kutenai a : stanisla > stanaslá *Stanislas, Stanley.*

French Vn and Vnə coalesce into Kutenai Vn. Both Vn and Vnə are in some instances subject to denasalization in Kutenai. In one instance, French Vn corresponds to Kutenai Vm.

anə > an: antuanə > ʔatuwán, ʔatwán *Anthony;* syzanə > so·sán, susán *Susan.* ɛn > an: adrɪɛn > ʔatłiyán, ʔatliyán *Adrian;* albɛn or albɛr > halpán, ʔalpán, halpán *Alben, Albert;*[8] žystɛn > yustán *Justin;*[11] yrbɛn > hulpán, hułpán *Urban;* Eng. žúwlyən, žyljɛn > culiyán *Julian;*[12] lysjɛn > łusyán, ło·syán *Lucian;* fabjɛn > pa·pyán, pa·piyan *Fabian.* ɛnə > an, a·n: øžɛnə > ho·sán, husán, ʔosán, ʔo·sán *Eugene;* elɛnə > ʔɛ·lán, ʔalán, ʔa·lá·n, ʔa·łán *Helen;* madlɛnə > matłán *Magdalen;* žyljɛnə > sulyán, suliyán, sułiyán, so·liyán *Julia.* inə > in: katerinə > katłín *Catherine;* kristinə, Eng. kristíyn > klistín, kilistín, kłistín *Christine;* žɔzefinə > so·sa·pín, susapín, susa·pín *Josephine;* polinə > po·lín, *Pauline;* žystinə > sustín, so·stín *Justinia.*

Denasalization. an > a, a·: antuanə > ʔatuwán, ʔatwán *Anthony;* fransua > plaswá, pilaswá, ła·swá, pla·swá, piła·swá, pła·swá *Francis.* in > i: polinə > po·łí *Pauline.* on > o· : simon > se·mó·, se·ʔmó· *Simon.*

on > um: leon > hilyúm CB, E *Leo.*

In some instances, French final i and e correspond to Kutenai in. In one instance, French final i corresponds to Kutenai it.

i > in: lysi > ło·sín *Lucy;* marilysi > mallusín, małłusín *Mary-Lucy.* e > in: andre > ʔantłín *Andrew.* i > it: rɔzali > so·salít, susalít, so·salłt CS *Rosalie.*

Syncope. In a number of instances, a French vowel between two consonants is elided. The result is a Kutenai cluster corresponding to French CVC. Vowels which are so elided are e, i, ə.

Elision of e: katerinə > katłín *Catherine;* øženi > ʔo·sní, ʔusní *Eugenia.* Elision of i: dɔminikə > tumné·k, tumník *Dominick;* marilysi > mallusí, mallusín, małłusín *Mary-Lucy;* kazimir > ka·smíł, ka·smíl, ka·smí *Casimir.* Elision of ə: margərite > maklít, maklít *Margaret;* anəmari > ʔanma·lí, ʔanmalí, ʔanmalí, ʔanma·łí *Ann-Mary.*

French e in most instances corresponds to zero in Kutenai, in accordance with its most frequent phonetic value. Those instances in which there is a corresponding phoneme in Kutenai will be treated together with English ə.

English vowels.

a, æ, e, and ə coalesce into Kutenai a or a·. Likewise, French ə, wherever not corresponding to zero, corresponds to Kutenai a.

a > a: rábərt > laput *Robert.* a > a·:

[17] Cf. Kutenai ny, niy < Fr. ɲ, p. 69.

ǯan > ca·n *John;* ǯániy > ca·ní *Johnny.* æ > a: æloíšəs > ʔalwisis, ʔaluwisis, ʔałwisis *Aloysius;* ǽnə > ʔana *Anna;* klǽrə > klala, kłała *Clara;* sǽrə > sala *Sara;* pǽtrik > patłík *Patrick;* mǽθyuws > małyus, małiws *Matthew.* æ > a·: sǽrə > sa·la·, sa·ła *Sara;* pǽtrik > pa·tlé·k, pa·tłík *Patrick;* pæt > pa·t *Pat;* sæm > sa·m *Sam;* hæriy > ha·lé·, ha·łí *Harry.* e > a: iylízəbeθ > nisapáł *Elizabeth;* mélkyər > malkyus, malkiws, malkiw, małki *Melchior.* e > a·: iylézəbeθ > nisapá·ł *Elizabeth;* tériy > ta·łí *Terry.* ə > a: ǽnə > ʔana *Anna;* klǽrə > klala, kłała *Clara;* iylízəbeθ > nisapáł, nisapá·ł *Elizabeth;* sǽrə > sala, sa·ła *Sara;* wílyəm > hulyám, huliyám, huliyam *William;* Fr. ernestə > ʔanasta *Ernest;* Fr. luizə > hiłwisa *Louise.* ə > a·: sǽrə > sa·la· *Sara.*

an > a: mártən > małta *Martin.*

In two cases of assimilation, English ə corresponds to Kutenai i: æloíšəs > ʔalwisis, ʔaluwisis, ʔałwisis *Aloysius;* ǯíyzəs > si?si, sisi, se·?si *Jesus.*

o corresponds in one instance to Kutenai u, in one instance to Kutenai w: o > w: æloíšəs > ʔalwisis, ʔałwisis *Aloysius.* o > u: æloíšəs > ʔaluwisis *Aloysius.*

i corresponds to i: æloišəs > ʔalwisis, ʔaluwisis, ʔałwisis *Aloysius;* iylízəbeθ > nisapáł, nisapá·ł *Elizabeth.*

Diphthongs. iy > i?: ǯíyzəs > si?si *Jesus.* iy > iy: líyow > łiyu *Leo.* iy > i: ǯíyzəs > sisi *Jesus;* ǯániy > ca·ní *Johnny;* hǽriy > ha·łí *Harry;* rówziy > lo·sí, ło·sí *Rosie;* tériy > ta·łí *Terry.* iy > e·: hǽriy > ha·lé· *Harry.* iy > e?: ǯíyzəs > se·?si *Jesus.* ay > ay: áyzək, Fr. izak > aysá·k *Isaac,*[4] mayk > mayk *Mike.* aw > aw: háwərd > hawít *Howard.* aw > a·w: háwərd > ha·wít *Howard.* ow > o·: rówziy > lo·sí, ło·sí *Rosie.* ow > u: liyow > łiyu *Leo.* uw > o·: luwk > ło·k *Luke.* uw > o·?: luwk > ło·?k *Luke.*

6.3. Word-initial phenomena. Initial vowels do not occur in Kutenai Christian names, although they are found in native sequences. Initial vowels in cognates correspond to ? + vowel, resp. h + vowel in Kutenai.

V > ?V, e.g.: Fr. adam > ʔatá·m, ʔa·tá·m *Adam;* Fr. eduar > ʔe·twáł, ʔitwáł *Edward.* V > hV: Fr. albɛn or albɛr > halpán, hałpán *Alben, Albert,*[5] Fr. øžɛnə > ho sán, husán *Eugene;* Fr. elizabɛt > hilisapá *Elizabeth;* Fr. yrbɛn > hulpán, hułpán CS *Urban.*

In some instances, the syllable hi appears before the expected initial consonant: Fr. lui > hilwé·, hiłwé·, hiłwíy *Louis;* Fr. luizə > hiłwís, hilwís, hiłwisa *Louise;* Fr. leon > hilyúm *Leo.*

7. Short forms. In a number of cases, short forms exist beside the full forms. These short forms are sometimes translations of, and loans from, English short forms, such as sa·m < sæm *Sam,* or pa·t < pæt *Pat.* These have been treated together with the long forms. Other short forms are abbreviations of Kutenai forms. These are: hili, short for hilisapá *Elizabeth, Isabel;* sako·, short for sa·kó·p *Jacob;* pili, short for pilisít CB, BF *Bridget, Felicitas, Phyllis;* ła·swá, short for plaswá, pla·swá, pilaswá *Francis.* nisa *Isabel* can also be considered a short form for nisapáł, nisapá·ł *Elizabeth,* although the full form has not been found where this short form occurs

IMMEDIATE CONSTITUENTS OF MAZATECO SYLLABLES

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1. Orientation
2. First Division: Margins versus Nuclei
3. Second and Third Divisions: Principal versus Subordinate Consonants, of Margins
4. Second Division: Vowels versus Tones, of Nuclei
5. Third and Fourth Divisions: Principal versus Subordinate Vowels
6. Third and Fourth Divisions: Principal versus Subordinate Tones
7. Summary
8. Application

1. It is well known that sentences have an internal structure which can be analyzed in terms of successive layers of immediate constituents.[1] Thus, the sentence *Poor John ran away* divides first into *Poor John* and *ran away*, then *Poor John* divides into *Poor* and *John*, while *ran away* divides into *ran* and *away*, and so on.

It is convenient to describe syllables of Mazateco[2] in a similar fashion. The structure of these syllables does not consist of a series of sounds equally related, like beads on a string, but is rather like an overlapping series of layers of bricks. The different layers in the syllable tend to have different phonetic and grammatical characteristics.

2. The majority of Mazateco syllables consist of a single chest pulse, as in hma^{2} (in which the number following a syllable gives its tone; 1 is high level, 4 is low level, and so on) *black*. Some syllables, however, begin with a nasal consonant followed by two consonants—the second a glottal stop—before the vowel. In these syllables a weak chest pulse for the nasal precedes a strong chest pulse for the vowel; the weak and strong chest pulses fuse into a single functioning syllable. For this type of syllable note the words nt$^{?}$e^{1} *good* or *industrious*, nč$^{?}$ą^{1} *cold*, and nk$^{?}$a^{3} *tall*.

The releasing[3]—i.e. trigger—segments in the syllable comprise its marginal elements. One, two, or three consonants may enter a syllable margin, as in the following illustrations: to^{3} *fruit;* č$^{?}$a$^{1\text{-}3}$ *a load;* hnko^{3} *one*.

The main part of syllable pulse itself—the nucleus of the syllable—is carried by the vowels. One, two, or three vowels may enter a syllable nucleus, as follows: sa$^{1\text{-}3}$ *moon;* čao$^{3\text{-}4}$ *dust;* koai^{4} *he will go*. Two vowels juxtaposed, as in the second of the preceding illustrations, do not make two syllables; the two vowels are pronounced together very rapidly, so that the timing seems to be about the same as that for a single vowel. The nucleus of the syllable takes about the same length of time—within the limits of perception—regardless of the

[1] See, for example, Leonard Bloomfield, Language 161 (New York, 1933); K. L. Pike, Taxemes and Immediate Constituents, in Lang. 19.65–82 (1943) (with diagram p. 70). For intonational analysis, see K. L. Pike, Intonation of American English (Ann Arbor, 1945).

[2] A language of Oaxaca, Mexico. The data for this paper was gathered under the auspices of the Summer Institute of Linguistics in annual field trips by one of the authors (EVP) from 1936–45, and in 1936 and 1938 by the other author (KLP). The latter was able to make further investigation and contribute toward the preparation of this manuscript in 1945, as part of the work undertaken as Lloyd Post-Doctoral Fellow of the University of Michigan.

[3] For instrumental studies of the releasing and arresting action of consonants in the syllable, see R. H. Stetson, Motor Phonetics, A Study of Speech Movements in Action, in Arch. Néer. Phon. Expér. Vol. 3 (La Haye, 1928). For a discussion of the relation of the syllable pulse to the phoneme, see his Bases of Phonology (Oberlin, 1945).

number of vowels it contains, whether one or two or three.

The syllable must be divided into margin and nucleus for other reasons than their relation to the chest pulse, however:

Mazateco is tonal, with significant lexical or grammatical pitch on each of its syllables. Many words differ in meaning with concomitant differences of pitch, but such pitch contrasts are limited exclusively to the segments here called the vowels, and the vowels are limited to the nuclei. Now of the margins many of the consonants—especially the nasals—have noticeable pitch characteristics; there is a sharp functional difference, however, between the pitch on the consonants and the pitch on the vowels: The pitches on the items called consonants never form contrasts in such a way as to carry different meanings. The contrastive tone in the language is a characteristic of the nucleus of the syllable; this constitutes one of the major reasons for separating the margin from the nucleus of the syllable on the first division of the syllable into its immediate constituents.

One other minor reason may be given for the breaking of constituents between the margin and nucleus: a nucleus may contain a nasalized vowel. Now if such a vowel occurs in the nucleus, every other vowel in that nucleus is also nasalized; the nasalization covers the entire nucleus. However, the nasalization does not pass over to the margin, even when the segment immediately preceding the nucleus is very similar to a vowel in its phonetic characteristics. A rapid vowel i at the beginning of a nucleus is quite similar to the consonant y just preceding a nucleus. Nevertheless, the vowel i would be nasalized, but the y would not be nasalized, by a preceding nasalized vowel, as in the following illustration: si^{1}ti^{2}ya^{3} *he shakes*, or *stirs* (*something*).

3. Turning now specifically to the margins, one finds the following alphabetical list of single consonants which may precede the nucleus in a syllable: b, c, č, č, d, g, h, k, l, m, n, ñ, p, r, ř, s, š, t, v, y, ?.

The unaspirated stops t and k become voiced after nasals, unless followed by h: ti$^{3-4}$ *boy*, ki^{3}šo$^{1-3}$ *landslide*, na^{2}nta$^{1-3}$ *water*, nka^{4}hao^{4} *a water hole*. An extremely small number of loans containing t from Spanish do not follow this rule, and words containing them are marked with an asterisk to show that they are not completely assimilated; in them, stops remain voiceless: *sie^{2}nto^{4} *hundred*.

The voiceless unaspirated stop p occurs only in loan words, as does also the voiced stop b and the voiced fricatives d and g: bo^{1}řo$^{1-3}$ *burro*, mba$^{3-4}$ *godfather* (Spanish compadre), šo^{3}mbe$^{3-4}$ *hat* (Spanish sombrero), se^{2}da^{4} *silk* (Spanish seda), *ga^{2}nčo^{4} *crochet hook* (Spanish gancho).

The glottal stop ? at times is actualized as a complete stop, and at other times optionally as a laryngealization (or "glottalization") of the following vowel. When ? is the second member of a consonant cluster, a vowel which follows it phonemically may phonetically have a slight pre-articulation before the ?, but such a sequence with light pre-articulation contrasts phonemically with a sequence of consonant, full vowel, glottal stop, and full vowel: n?ą$^{4-3}$ *father*, na^{4}?i^{4}-vi^{4} *a mother* (*who is*) *here;* č?o^{4} *bud*, čo^{4}?o^{1} *hiccough;* note also n?o^{1}ya$^{1-3}$ *class of potato*, no^{2}?ya^{2} *we* (*inclusive*) *hear;* s?oia^{1} *we* (*incl.*) *grind;* šo^{1}?ya$^{1-3}$ *rose*.

The affricates act like the stops in becoming voiced following nasals unless the combination of nasal plus affricate is in turn followed by h. Three affricates occur:

[4] Articulations in the mouth are primary, those in the nose secondary, those in the throat tertiary; if two articulations occur simultaneously in the mouth, the one with the least degree of closure becomes subprimary. See K. L. Pike, Phonetics, A Critical Analysis of Phonetic Theory and a Technic for the Practical Description of Sounds 131–3, in University of Michigan Publications in Language and Literature, Vol. 21, Lithoprinted Edition (Ann Arbor, 1944).

alveolar c [ts], alveo-palatal č, and a retroflexed alveo-palatal ç: coa^{4} *he will hold*, čoa^{4} *sign*, çoa^{4} *plate;* nca^{4} *my hand*, ya^{1}nčhį$^{1-3}$ *women*, ya^{1}nčhį^{4} *meat hook, clothes tree*, nça^{4} *horn*, nčąǫ^{3} *tomorrow*, ncha^{3} *his hand.*

These phonetically complex units must be considered single phonemes because they act like simple consonant phonemes in their entrance into consonant clusters. Occasional unassimilated loan words contain č unvoiced after nasals and are marked with an asterisk: *ga^{2}nčo^{4} *crochet hook* (Spanish gancho).

Of nasals, there are m, n, and ñ; the alveolar n becomes velar before velar stops: ha^{4}ma^{4} *a root*, ni^{3}sa$^{3-4}$ *water jug*, ño^{3} *four*, to^{3}nka$^{3-4}$ *small gourd.*

The sibilant s has no marked variants; alveo-palatal š has considerable retroflexion before vowels, but less before consonants: sa$^{1-3}$ *moon*, ša$^{1-3}$ *work*, ška$^{1-3}$ *trousers.*

The phoneme h takes many forms: before vowels or y, it assumes their shape; before nasals, it becomes a voiceless nasal fricative: ha^{4} *hawk*, li^{4}hi^{4} *grass*, hnti^{1} *dirty*, hma^{2} *black.*

The phoneme v is a bilabial fricative with flat (i.e. not markedly rounded) lips; before h it becomes voiceless: va^{3}-na^{3} *I am sad*, vha^{3}ti^{2}-na^{3} *I am thirsty.*

The alveo-palatal voiced glide y has no marked variants. It differs from i in that it does not carry contrastive tone, is not nasalized by contiguous nasalized vowels, and may begin the syllable. The y always goes with the chest pulse of the nucleus which it precedes, whereas the i often enters a syllable pulse with a vowel which it follows; the break between syllables is different in the following words, occurring before y in the first illustration, but after i in the second: s?a^{4}-y?a^{3}na^{3} *he is going to carry for me*, s?ai^{4} ?a^{3}na^{3} *I will not be busy in the afternoon.* The y is not nasalized in the following word: si^{1}ki^{2}ya^{3} *he lends.*

Of the three remaining consonant phonemes, the voiced lateral l is the most frequent; r (a light, voiced flap) is very rare (in only three morphemes of native origin in the data at hand); r̃ (a trill) occurs only in Spanish loans: la^{4}hao^{4} *stone*, to^{1}ro^{1}hčo$^{1-3}$ *lizard*, ko^{2}r̃e^{4} *godmother* (Spanish comadre).

The consonants which have been listed are found in various combinations. These combinations present a definite structure. In the structure of the clusters certain of the consonants may be considered the principal ones, and others subordinate.

In the great majority of clusters of two consonants, (43 out of the 47 recorded), one of the two must be h, n, or ?. In the remaining clusters, s or š must be present. The h, n, ?, s, or š may well be considered a subordinate element in the cluster, whereas the other consonant—chosen from a much larger list—may be considered the principal member, (1) because the articulation of the subordinate one tends to be secondary,[4] tertiary, or subprimary in relation to the primary articulations of the other members of the clusters, and (2) because of the drastic limitation in the number of clusters which the restricted number of subordinate elements imposes.

The subordinate member of the two-consonant cluster may come first or second. Note the following specific clusters:

With subordinate h as first member: ht, hk; hc, hč, hç; hv, hy; hm, hn (varying to nhn in the word hne^{4} *tepexilote*—a certain palm nut), hñ; hti^{4} *fish*, hka$^{3-4}$ *stubble;* hce$^{1-3}$ *a sore*, hči^{4} *small*, ha^{4}hçǫ^{3} *in the opening of;* hva$^{4-3}$ *watery*, hyǫ^{3}-na^{3} *I want;* hma^{2} *black*, hno^{4} *corn*, hña$^{1-3}$ *woods.*

With subordinate n as first member: nt, nk; nc, nč, nç; nta$^{4-3}$ *good*, nka^{4}hao^{4} *water hole;* nca^{4} *my hand*, nči^{2}?ę^{3} *bent*, nça^{4}ti$^{1-3}$ *comb.*

With subordinate ? as first member: ?v, ?y; ?m, ?n, ?ñ; ?va^{4} *hook*, ?ya^{4} *rainbow;* šo^{1}?ma$^{1-3}$ *earthen jar*, na^{4}?ni$^{1-3}$ *brier*, ni^{3}?ña$^{3-4}$ *writing pen.*

With subordinate h as second member: th, kh; ch, čh, çh; vh; mh, nh; sh, šh;

tha^{4} *light in weight,* khą^{3} *bad smelling;* che$^{4-3}$ *clean,* ča^{4} *brother-in-law* (brother of husband), čhoa^{4} *skin;* vhi^{2} *he goes;* v?a^{3}mhę$^{4-3}$ *I walk,* nhę^{3}-na^{3} *it is gained by me;* sha^{3} *bitter,* šhao^{3} *dew.*

Clusters with a stop or affiricate as the first member and h as the second member cannot be considered as single complex aspirated consonant phonemes, (1) because of the pressure of the pattern from parallel clusters with the h as the first member (th, ht; kh, hk; ch, hc; čh, hč; čh, hč); (2) because of the presence of clusters with h as the second member but nasal or sibilant as the first member (mh, nh, sh, šh); and (3) because of the parallel types with ? as the first or second member of the cluster (?v, ?m, t?; m?, s?, l?, etc.).

With subordinate ? as second member: t?, k?; c?, č?, č?; v?, y?; m?, n?, ñ?; s?, š?; l?; t?į^{3} *go* (imperative), k?ia^{4} *then;* ę?e^{2} *lazy,* č?oa$^{1-3}$ *parrot;* č?oa$^{1-3}$-le^{4} *pieces left over;* v?e$^{4-3}$ *I hit,* y?a^{3} *I carry;* m?ę$^{4-3}$ *he is sick,* n?o$^{1-3}$ *rope,* ñ?ąį^{3} *difficult;* s?oi$^{1-3}$ *fiesta,* š?į^{4} *man;* l?i$^{1-3}$ *fire.*

Clusters with a stop or affiricate as the first member and ? as the second member cannot be considered as single complex glottalized consonant phonemes, (1) because of the parallel with the clusters with ? as the first member (?v, ?m, etc.); (2) because of the presence of the clusters with ? as the second member but a nasal, sibilant, lateral, or voiced fricative as the first member (m?, s?, l?, v?, etc.); (3) because of the parallels with h; (4) because there is usually a very slight open transition between the stop and the ? in the same syllable, so that the stops are not phonetically glottalized—i.e. they are not made with egressive pharynx air; and (5) this phonetic gap between the stop and the ? in clusters is often further accentuated in that ? may be actualized as the laryngealization of the following vowel rather than as a separate complete stop, while often there is a slight pre-articulation of the vowel before the ? (but after the oral stop in the sequence of oral plus glottal stop).

With subordinate s as first member: sk; ska^{1} *crazy.*

With subordinate š as first member: št, šk; šn (rare—only in the illustration given); šti$^{3-4}$ *children,* ška$^{1-3}$ *trousers;* nka^{3}šni$^{3-4}$ *Chiquihuitlan.*

In certain of the clusters just listed, it may be observed that both members of the cluster may occur elsewhere as the subordinate member. This effects the clusters hn, ?n, nh, n?, sh, šh, s?, š?, and šn. Apart from this list, the consonants h and ? never occur as the principal member of a cluster; for this reason it is convenient to consider them the subordinate members here also. Thus, they occur before the principal member in hn, ?n, but after the principal member in nh, n?, sh, šh, s?, and š?. Supporting this conclusion are the following facts: s and š are rarely subordinate members, and are best considered principal ones in sh, šh, s?, and š?; there are no parallels for n subordinate but second in the cluster, so in hn, ?n, and šn the n is best considered the principal member.

Clusters of three consonants also occur. In them, two consonants of each cluster are always found to be chosen from the list of subordinate consonants already listed.

The two subordinate consonants in a cluster of three consonants may be distributed in one of two ways: either the two subordinate consonants may precede the principal one, or one of the subordinate consonants may precede but the other follow the principal consonant. Note the following lists of clusters:

With the subordinate consonants ?n before the principal member of the cluster: ?nt, ?nk; ?nc, ?nč, ?nč; ?nto^{3} *rotten,* ?nki$^{4-3}$ *he hoes;* li^{4}?nci$^{2-3}$ *brown hawk,* ?nči^{4} *wet,* či^{3}?nčo^{3} *blackberry.*

With the subordinate consonants hn before the principal member of the cluster: hnt, hnk; hnč, hnč; hnti^{1} *dirty,* hnka^{3}

wing; vi³hnči⁴·³ *you* (*sing.*) *look for,* hnča³ *sally.*

With the subordinate consonant n preceding the principal member of the cluster but with ʔ following the main member: ntʔ, nkʔ; ncʔ, nčʔ, nčʔ; ntʔe¹ *industrious,* nkʔa³ *tall;* ncʔe⁴ *his brother,* nčʔą¹ *cold,* nčʔoe¹ *he hears.*

With the subordinate consonant n preceding the principal member of the cluster but with h following the main member: nth, nkh; nch, nčh, nčh; nthao⁴ *wind,* nkhį² *many;* nchao¹·³ *rust,* ncha¹ *fat,* ya¹nčhį⁴ *meat hook, clothes tree.*

With the subordinate consonant h preceding the principal member of the cluster but with ʔ following the main member: hcʔ, hčʔ; hcʔę¹·³ *sprout,* ʔnti¹hčʔą⁴ *orphan.* These clusters are rare, and tend to vary to cʔ and čʔ.

With the subordinate consonant s or š preceding the principal member of the cluster, but with ʔ following the main member: skʔ; štʔ, škʔ; skʔao¹ *it will break;* ha⁴štʔa⁴·³-la²nka¹ *goodbye,* škʔę¹ *thin.*

When two consonants comprise a consonant cluster, its immediate constituents are the two consonants, respectively, with one of them the principal constituent and the other the subordinate constituent. When three consonants comprise the cluster, it is best to consider that the first consonant comprises the first constituent, and the next two consonants the second constituent, (1) since the first consonant tends to be phonetically very weak when the syllable comes at the beginning of utterances and (2) since that consonant occasionally syllabifies partially with the preceding syllable in the middle of utterances. Thus the immediate constituents of the cluster hnt are h and nt, and then the constituents of nt are n and t.

The layers of immediate constituents of the syllable ncʔoai³·⁴ *our* (*excl.*) *stomachs,* in so far as has been analyzed in the preceding paragraphs, can be symbolized as follows: ([n][cʔ])(oai³·⁴); subdivisions of the nucleus will be given in following sections.

4. Turning to the nuclei, one must conclude that the entire sequence of vowels in a single syllable constitute the first immediate constituent of the nucleus, and that the entire sequence of (contrastive) tones on that nucleus constitutes its second immediate constituent. It will not do to attempt to correlate each vowel with one and only one tone, or each tone with one and only one vowel.[5]

The reasons for this analysis of the constituents are the following: (1) Each nucleus is of approximately the same length, as has already been pointed out, but since the nuclei may contain from one to three vowels in this length of time, the vowels do not constitute units of length coincident with the length of the nuclei of the syllables; similarly, since the nuclei may contain from one to three tones in approximately the same length of time, neither do the tones constitute units of length coincident with the length of nuclei. (2) If the nucleus has three vowels and but one tone, that one tone is spread over the three vowels; if the nucleus has one vowel but two tones, those two tones are both pronounced on the single vowel, forming a rapid glide. In summary, the number of vowels is independent of the number of tones, and the number of tones is independent of the number of vowels, while the length of the nucleus remains—within perceptual limits—nearly constant.

In the following illustrations, notice that the first syllable has a single vowel and single tone; the second, two vowels but one tone; the third, three vowels but one tone; the

[5] This constitutes one of the fundamental differences between the tonal systems of Mixteco and Mazateco. In Mixteco such a positive correlation of one tone to one vowel and vice versa constitutes a key to its tonal structure. Compare K. L. Pike, Analysis of a Mixteco Text, and Tone Puns in Mixteco, in IJAL 10.113–38 (1944), and IJAL 11.129–39 (1945).

fourth, one vowel but two tones; the fifth, two vowels but two tones; the sixth, three vowels but two tones; the last syllable of the seventh, two vowels but three tones. All of these nuclei should be pronounced with approximately the same speed: (1) ki^{3} *he went*, (2) skai^{4} *you will fall*, (3) koai^{4} *he will go*, (4) se$^{4\text{-}3}$ *he sings*, (5) čai$^{2\text{-}3}$ *you (sing.) dance*, (6) nčoai$^{2\text{-}3}$ *you (sing.) come*, (7) va$^{4\text{-}3}$ntia$^{4\text{-}2\text{-}3}$ *I travel.*

The first layer of immediate constituents of the nucleus of the syllable may now be added to the formula previously given, as follows: ([n][c/ʔ])([oai][$^{3\text{-}4}$]).

The vocalic constituent may be considered the principal one, and the tonal constituent subordinate, (1) because the articulations for the vowels are primary[6] but for tone are tertiary, and (2) because the first part of the vocalic element seems to be morphologically slightly more stable than the first part of the tonal element, though the second part of each is likely to change in the morphology.

5. There are four non-nasalized vowels: i, e, a, o, and their corresponding nasalized types: į, ę, ą, ǫ. The vowel a varies freely toward [ʌ]; e tends to be phonetically [ɛ]; i has no prominent varients; o varies freely over a considerable range from [o] to [u]. Following nasals—but not preceding them—the oral vowels tend to become slightly, though nonphonemically, nasalized. Note the following illustrations for the vowels: khi^{3} *it appears*, khį^{3} *far;* cʔe^{4} *his*, cʔę^{4} *bad;* ša$^{1\text{-}3}$ *work*, šą$^{1\text{-}3}$ *liquor;* čho^{3} *you (pl.) write*, čhǫ$^{4\text{-}2}$ *woman.*

The vowels occur in various combinations. Oral vowels may occur in sequence within a nucleus, and nasalized vowels may do likewise, as in hkoe^{3} *rough*, or tǫą^{2} *fierce.* No sequence is found of an oral vowel followed by a nasalized vowel, or of a nasalized vowel followed by an oral vowel, in the same nucleus—nor are mixed sequences found between syllables, since every nucleus is preceded by its consonantal margin.

When the nucleus of a syllable contains but one vowel, any of the vowels may be found: ti$^{3\text{-}4}$ *boy*, te^{3} *ten*, ša$^{1\text{-}3}$ *work*, to^{3} *fruit;* ya^{1}sį^{3} *his neck*, thę^{3} *his forehead*, są^{3} *sour*, nti^{4}tǫ^{4} *immediately.*

When the nucleus of a syllable contains two vowels, any vowel may occur as the second of the two, but only a, i, or o may occur as the first; e does not appear in a vowel cluster as the first of two. When a stem vowel e has some other vowel fused to it in the morphology, the following changes occur: ei > ai, ea > e, eo > ao: vʔe^{1}te$^{4\text{-}3}$ *he chases* + -i^{3} *dependent pronoun of second person singular* > vʔe^{2}tai$^{4\text{-}3}$ *you (sing.) chase;* vʔe^{1}te$^{4\text{-}3}$ *he chases* + -a^{3} *dependent pronoun of first person singular* > vʔe$^{4\text{-}3}$te$^{4\text{-}3}$ *I chase;* vʔe^{1}te$^{4\text{-}3}$ *he chases* + -o^{3} *dependent pronoun of second person plural* > vʔe^{2}tao$^{4\text{-}3}$ *you (pl.) chase.*

For two reasons the second vowel of two may be considered the principal one: (1) Usually the second is phonetically the more prominent, since in the rapid pronunciation of the two-vowel nucleus the first tends to be reduced very sharply while the second remains the stronger and seems to carry the larger share of the tonal glide if one is present. (2) In two-vowel clusters the second position may have the more diverse types of vowels, since the vowel e may occur there but not in the first position. Morphological divisions do not help to establish the principal and subordinate positions in clusters of two vowels, since many clusters which contain a morpheme boundary between their vowels may have homophonous clusters with no such barrier and with no difference of phonological juncture. Note the following words; in the first word of each pair the vowel cluster will be part of the stem, but in the second word there will be a morpheme division between the vowels: cʔoi$^{1\text{-}3}$ *sun*, niˀchoi$^{2\text{-}3}$ *you (sing.) toast*, nkią$^{1\text{-}3}$ *shade*, vʔe$^{4\text{-}3}$hią$^{4\text{-}3}$ *I put in.*

[6] See footnote 4.

The vowel e occurs in clusters only when the entire cluster is part of the stem; it never occurs in a vowel cluster as a morpheme distinct from the stem even though fused to it; all other vowel clusters can be found either as part of a stem or with morpheme division between them, as in the preceding illustrations.

Note the following specific clusters of two vowels in single-syllable nuclei:

With subordinate i as first member: ie (rare, only one sample, and tending to vary to e), ia, io; si^{1}khie^{3} *he uses up*, si$^{4-3}$k?ia$^{4-3}$ *I paint*, ni^{2}k?io$^{4-3}$ *you (pl.) paint.*

With subordinate a as first member: ai, ao; n?ąi$^{4-3}$ *father*, čhao$^{4-2}$ *an egg.*

With subordinate o as first member: oi, oe, oa; vi^{3}thoi^{4} *you (sing.) go out*, shoe^{2} *hot*, khoa^{4}soa$^{4-3}$ *shame.*

Nasalized vowels occur with the same distribution in clusters as do the oral vowels:

With subordinate į, ą, or ǫ as first member: įę (rare, and tending to vary to ę), įą, įǫ; ąi, ąǫ; ǫi, ǫe, ǫą; k?įę^{3} *dead*, ki^{3}cįą$^{4-3}$ *I was born*, ki^{3}cįǫ$^{4-3}$ *you (pl.) were born;* hą^{3}?ąi$^{1-3}$ *name*, čąǫ$^{1-3}$ *earthquake;* k?ǫi$^{1-3}$ *you (sing.) will go*, škǫę^{1} *not ripe*, tǫą^{2} *fierce.*

Clusters of three vowels also occur in single syllables. The first two vowels of the clusters are limited to the groups ia, oi, oa; the third vowel of the cluster is limited to i, a, or o. The vowel e does not occur in any position in a cluster of three. Note the following specific clusters:

With ia at the beginning of the cluster iai, iao; v?e^{3}škiai^{4} *you (sing.) read*, v?e^{3}škiao$^{4-3}$ *you (pl.) read.*

With oi at the beginning of the cluster: oia; sk?oia^{4} *I will drink.*

With oa at the beginning of the cluster: oai, oao; čhoai$^{1-3}$ *you (sing.) will take*, k?oao$^{4-3}$ *you (pl.) will give.*

Nasalized vowels occur with the same distribution in clusters as do the oral vowels, in addition to clusters beginning with įą:

With įą, įǫ, ǫi, or ǫą as the first two vowels of the clusters: įąi, įąǫ; įǫą, įǫi; ǫią; ǫąi, ǫąǫ; s?įąi^{4} *you (sing.) will make*, s?įąǫ$^{4-3}$ *you (pl.) will make;* chįǫą^{3} *I let go*, v?e^{3}n?įǫi$^{1-3}$ *you (sing.) braid;* khǫią^{1} *we (incl.) will go*, ni^{2}tǫąi$^{2-3}$ *you (sing.) fight*, ni^{2}tǫąǫ$^{2-3}$ *you (pl.) fight.*

The first break in the immediate constituents of a three-vowel cluster comes between the second and third vowels (indicating greater unity between the first two than between the second and third), (1) because the third, if i or o, appears to be slightly less prominent than the second (but the third may be approximately equal or even stronger if it is the vowel a), and (2) because there is without exception a morphological barrier between the second and third vowels since a third vowel is always part of a fused pronominal element. The vowel e never occurs as the third of a cluster.

The formula for the immediate constituents of nc?oai$^{3-4}$ *our (excl.) stomachs* can be made more specific on the basis of the data just given: ([n][c/?])([{o/a}{i}][$^{3-4}$]).

Inasmuch as all of the clusters of vowels listed above, (1) contain either i or o, and many of them contain both, and (2) since it has been stated that the first element of such a cluster tends to become phonetically weak, it is expedient to present the reasons why these items are vowels and are not the consonants y and w (or v) respectively.

The following evidence indicates that none of the segments written as o in the vowel clusters—whether first, second or third—must be interpreted to be the consonant w or v:

(1) No consonant w exists in the language, either at the beginning of utterances or in the middle of them.

(2) The consonant v is phonetically very different from the sound represented by the symbol o in the clusters; v is fricative, with lips approximately parallel, even when the second element of a consonant cluster,

whereas o represents a frictionless sound with rounded lips wherever it occurs in the cluster: hao^{2} *two*, va^{3}-li^{2} *it is grievous to you*, soa$^{4-3}$-li^{2} *it is shamful to you.*

(3) The contrastive tone is spread over all vowels in a cluster, including any o, but not over v: ti^{1}ve^{3} *he knows*, toi$^{4-2}$ *slowly.*

(4) Various kinds of contrasts can be demonstrated between v and o (in the following samples, C represents some consonant and V some vowel): between V.vV and VoV (with difference of syllable division indicated by a lowered dot): ci^{4}.-vi^{4} *yours here*, nchi̱o̱i̱^{3} *you let go*, ci̱^{2}.-vi^{4} *none here;* between V.v?V and Vo.?V: ka^{2}.v?a^{3} *he carried*, kao^{4}.-?ą$^{3-4}$ *with me;* between an o and contiguous v, as in Co.vV: čo^{3}.va^{2} *we (incl.) talk*, (contrast čoa^{4} *sign* or *symbol*); between ?vV and ?oV: ?va^{4} *hook*, -?ǫą$^{3-2}$ *we are five;* co^{2}?va^{3} *he walks*, nčha^{2}?ǫą^{3} *I scold;* ?vi$^{4-3}$ *he drinks*, s?oi^{4} *fiesta*; similarly with h: hva$^{4-3}$ *watery*, -hǫą^{3} *on the surface of (with first person subject)*; hva$^{4-3}$ *watery*, -hoa^{2} *we are two;* between CV.?vV and C?oV: co^{2}.?va^{3} *he walks*, c?oa^{3} *his mouth.*

(5) Pattern analogy shows that both o and i in oi are vowels: In the cluster io, the more prominent is o, which is undoubtedly vocalic; similarly, the i is undoubtedly vocalic in oi. Both of these parallel the a of ia. On the other hand, a is certainly vocalic in ai and ao, even though it is less prominent than the i and the o, since there is no consonant with which it could be confused. Once vowels such as the a are found to carry but little prominence while preceding another vowel, the pattern allows both i and o in ia and oa to be vocalic even though they also have little prominence and precede another vowel. In other words, assuming a to be always vocalic, even when the first of a cluster of two vowels, the pattern pressure on o and i can be expressed in a proportionate formula:

a : ao :: i : ia; a : ai :: o : oa;
a : oa :: i : ai; a : oa :: o : ao.

Similar evidence shows o and i to be vocalic when they occur as the third vowel of a cluster; compare the last vowels of the clusters ioa, ioi, iao, oia, oao.

(6) Following ? as the second consonant of a cluster, o is laryngealized; v is not laryngealized after ?: n?o$^{1-3}$ *rope*, ?va^{4} *hook.* In the pattern V?V the second vowel is not laryngealized, but in v?V the vowel is so affected: thǫ^{2}?a^{3} *talkative*, v?a^{3} *he carries*, ti^{1}v?a^{3} *he is carrying*, thio^{1}?a^{3} *they are not busy.*

Preceding h, v is unvoiced, but o is not affected: ka^{2}vhe^{3} *it is done*, kao^{4}-he$^{2-3}$ *with him*, nto^{4}ho^{4} *soap*, ya^{4}-vhi^{2} *there he goes*, li^{2}–yao^{3}-hi̱^{2} *it is not sharp.*

(7) All vowels of a cluster are nasalized, if one of them is nasalized, but v is not nasalized next to nasalized vowels: ni^{2}tǫą̃i̱$^{2-3}$ *you (sing.) fight*, va^{3}sę̃^{1}va^{3}sę̃^{3} *he puts in the middle.*

(8) The changing of o to v would give nonpermitted types of consonant clusters: No consonant cluster contains more than three consonants, but four would result in the following: šo^{4}nthoa^{4} *door.* No consonant clusters have v as the second element unless they begin with h or ?, but others would result: ǰoa^{4} *plate*, c?oi$^{1-3}$ *sun*, and many others. No consonants occur finally in isolated syllables, nor at the end of words, but v would then so occur: v?e^{2}c?oao^{3} *you (pl.) beg*, v?e^{2}škiao$^{4-3}$ *you (pl.) read.*

(9) In a three-vowel cluster, the changing of a medial o to v would make an error by forcing one syllable of three vowels to appear as two syllables of one vowel each: contrast v?e^{2}n?i̱ǫi̱$^{1-3}$ *you (sing.) braid*, ?i^{4}-vi^{4} *here*, n?i̱^{3}-vi^{4} *man here.*

(10) The changing of o to v when it is the first member of a vowel cluster would complicate the statement of morphology, necessitating morphophonemic statements to cover the instances in which a stem vowel is followed by a fused pronominal vowel: vi^{3}tho^{3} *he goes out*, but vi^{3}thoa^{4} *I go out.* This would be further complicated by the fact that not all vowels would so change under these circumstances, since the a

would remain a: ka$^{4-3}$ *he falls*, kai$^{4-3}$ *you (sing.) fall.*

Much of the evidence just given indicates at the same time that segments written as v in the present material must not be written as o. These evidences include its phonetic character and conditioned variants, existing contrasts, and so on:

(11) The changing of v to o would eliminate from the writing many of the contrasts actually existing phonetically; it would prevent the use of symbols which could be defined so as to represent at all times the different phonetic variants of o and v. It would symbolize some groups of two syllables as single syllables, since groups of two or three vowels form single syllables whereas two vowels separated by v form two syllables. It would create apparent clusters of five or more vowels, in sequences such as ti^{1}v?e^{1}cao^{3}va^{3}-vi^{4} *he is scattering (something) here*, whereas three vowels are the most allowed in a cluster. It would destroy much of the symmetry of the pattern of consonant clusters by eliminating many of those with v. It would appear to change one syllable into two in sequences such as v?a^{3} *he carries.* It would have vowels initial in utterances, which actually do not occur thus, in syllables such as va^{3}-na^{3} *it is grievous to me.*

Once it is amply demonstrated that the segment o as the first of a vowel cluster is actually a vowel and not a consonant, it follows by analogy that i may be the first vowel of a cluster and does not have to be y. The evidence for such a segment functioning as a vowel rather than a consonant is almost as strong, however, as for o. The chief difference is that y and i are phonetically much more similar in Mazateco than are the o and v. In the vast majority of instances, however, there is no doubt; i is a vowel whether it occurs as the first, second, or third of those segments written here as clusters of vowels. The evidence for i as a vowel largely parallels that already given for o; the same numbering will be maintained as for o, for ready reference:

(1) Though w was lacking to parallel o, y is present to parallel i; no evidence here either way.

(2) y and weak i as first of a vowel cluster are quite similar; no evidence.

(3) Contrastive tone on i but not on y, but difficult to hear its beginning on rapid forms; evidence weak.

(4) Strong evidence from contrastive words, to separate y and i: V.yV and ViV: ko^{3}.ya^{3} *he waits*, khoia$^{1-3}$ *I will go*, khǫ^{3}.ya^{3} *he sews;* between V.y?V and Vi.?V: s?a^{4}.-y?a^{3}-na^{3} *soon he will carry for me*, s?ai^{4}.?a^{3}-na^{3} *I will not be busy in the afternoon;* between i and contiguous y as in Ci.yV: vi^{3}nti^{3}.ya^{3} *it is arched*, (contrast ntia$^{4-2}$ *road*); between ?yV and C?iV: ?ya^{4} *rainbow*, nt?ia$^{3-4}$ *house;* ni^{3}?ya$^{3-4}$ *home*, n?ią^{2} *we (incl.) make*, cį^{2}?ya^{3} *no one*, nka^{3}c?ia$^{3-2}$ *all (incl.)*; similarly with h: hyo^{3}-na^{3} *I am willing*, -hįǫ$^{2-3}$ *not you (pl.).*

(5) Strong evidence from pattern analogy, already presented above, to show i as a vowel whether first, second, or third in the cluster: a : ao :: i : ia; a : oa :: i : ai; etc.

(6) i but not y laryngealized after a consonant plus ?: č?i^{4} *drunk*, ?ya^{4} *rainbow*, nt?ia$^{3-4}$ *house*, li^{2}?ya^{3} *no one.*

(7) i but not y nasalized in a cluster with a nasal vowel: čią^{3} *near*, si^{1}kį^{3}ya^{3} *he lends.*

(8) i changed to y would give nonpermitted consonant clusters in the following illustrations: si^{1}hao^{2}ya^{3} *he divides*, nhįǫ^{2}yao$^{3-4}$ *meat tamale.*

(9) In the middle of a three-vowel cluster, i changed to y would upset the syllabification: khoia$^{1-3}$ *I will go;* compare ko^{3}ya^{3} *I wait.*

(10) i changed to y as the first of a cluster would complicate the morphological statement: khi$^{4-3}$ *he writes*, khia$^{4-3}$ *I write;* compare v?e^{1}?ma^{3} *he hides*, v?e^{2}?mao^{3} *you (pl.) hide.*

(11) The additional statements about the changing of v to o can all be applied to the changing of y to i, and need not be repeated here.

Clusters of two or three vowels cannot be

considered single complex phonemes, because of the contrastive but analogous pairs such as io and oi, ia and ai, ao and oa, oai and iao, ioa and oia, oao and iai. Supporting this conclusion is the fact that many of the clusters of two vowels and all of the clusters of three vowels are interrupted grammatically though not phonetically by a morpheme barrier: si^{1}choa^{3} *he makes happy* + -i^{3} *sec. per. sing. dep. subj. pronoun* > ni^{2}choai^{3} *you make happy*, and so on.

Every full word in isolation or in context contains a stress on its last syllable. Certain dependent morphemes may follow words and be rhythmically grouped with them but left unstressed; these enclitics are indicated by a hyphen between them and the words which they follow: ni^{3}ʔya$^{3-4}$-na^{4} *my home*. A different set of stressless morphemes may precede words and be proclicized to them; these are indicated by an en-dash between them and the words to which they are proclicized: ʔa^{3}–ʔnti^{1}-ni^{1} *is it small?* Proclitics receive stress when joined directly to enclitics, in which case a hyphen is retained between them: ya^{4}-ve^{4} *there*.

Vowels or vowel clusters which are stressed take a bit longer for their pronunciation than do unstressed vowels or clusters of vowels: In the following pairs of words, the vowel or vowel cluster in the final syllable or before hyphen is given more prominence and is longer than the other vowels: ntia^{4}ʔya$^{1-3}$ *bull thistle*, khoa^{4}soa$^{4-3}$ *shame*, si^{1}khao^{2}ʔa^{3} *he advises*, ti^{4}hnta^{1}-lai^{4} *sing it!*

Some restrictions exist in the relationship between permitted margins and permitted vowels of the nuclei:

The vowel o may not be preceded by the consonant v or clusters with v.

The vowel e may not be preceded by the consonant š.

The vowel i may not be preceded by the consonant ñ or clusters with ñ.

The nasalized vowels have the same limitations, and in addition may not be preceded by v, y, l, r, or their clusters, nor by m, n, and ñ.

The combinations oV and iV may follow Cʔ but not ʔ or Vʔ; this restriction does not apply to ǫą or įą etc., nor to simple o and i. Thus one finds cʔoa^{3} *his mouth*, ntʔia$^{3-4}$ *house*, -ʔǫą$^{3-2}$ *we are five*, to^{3}nco^{2}ʔo$^{3-4}$ *spider*, ʔi^{4}-vi^{4} *here*, but not *ʔoa or *ʔia.

Certain other combinations are very rare: m + o, ti^{2}moa^{3} *I am mowing;* ç or its clusters, + e, çhe^{1}ʔę$^{1-3}$ *rooster's comb* (alternate çhi^{1}ʔę$^{1-3}$); ñ + e, ti^{2}vʔe$^{4-3}$ñe$^{4-3}$ *I am burying;* č, or its clusters, + e, nče$^{4-2}$ *cooked whole corn;* y + e, ye^{4} *snake;* y, or its clusters, + i, nka^{3}yi^{3}he$^{3-4}$ *all*; ç, or its clusters, + i, ti^{1}çhi$^{4-3}$ *festered*, ya^{1}nçhi^{4} *meat hook, clothes tree.*

6. The basic tones of Mazateco are four. Each of these tones is phonetically level, within the limits of perception. The only difference between them is their relative height; the relative height of the tone of any syllable is proportionate to the height of the tone of other syllables in the immediate context. The specific number of vibrations per second is immaterial to the tone; the momentary differences or contrasts within specific contexts are pertinent to the tonal system. Thus, a tone which is significantly—phonemically, contrastively—high at one moment, is high in that context because it contrasts with certain other lower tones; if a moment later the pitch of the entire utterance is lowered, the "high" tone remains high since it still is higher than the other syllables, even though it may now actually be lower in pitch than any of the syllables were in the previous pronunciation of the same sentence. Compare the following illustrations (the highest tone is written with the numeral 1, the lowest with 4): cʔe^{1} ʔnti$^{1-3}$ *small pheasant*, cʔe^{1} he$^{3-4}$ *big pheasant*, cʔe^{1} cʔe$^{2-3}$ *lazy pheasant*, cʔe^{3} ʔnti$^{1-3}$ *small membrane (such as of an orange section)*, cʔe^{4} cʔe^{4}-ni^{1} *it is his pheasant.*

The distance between the four contrastive pitches seems, to English speakers, to be

very slight. The tones appear to be much closer together than the three contrastive level tones of Mixteco,[7] for example. The pitch gap between the tones has not yet been measured; the range of deviation for each of the tones must await instrumental analysis.

The tones have no striking subphonemic variants which occur either freely or conditioned by particular kinds of contexts.

When two different level tones are juxtaposed on a single syllable nucleus, they fuse to form a glide. The glide itself is not significant, but must be analyzed phonemically in terms of its beginning point and ending point. The glide is very rapid, since the total length of the nucleus is but little affected by the presence of two tones. Three tones may similarly coalesce into a two-direction glide—a rising-falling one.

A one-step glide is caused by the juxtaposition on a single syllable of two tones contiguous in the scale of contrasts: this includes the falling glides 2-3 and 3-4, and the rising glides 4-3, and 3-2 (though theoretically possible, 1-2 and 2-1 do not appear). A two-step glide is caused by the juxtaposition of two tones which are not contiguous in the scale of contrasts: this includes the falling glides 1-3 and 2-4, and the rising glide 4-2. A three-step glide 1-4 is also found. A one-step glide is difficult to hear, and is likely to be overlooked completely in the early stages of analysis; a two-step glide is much more apparent, and is likely to be noticed early in one's course of investigation.

[7] The four contrastive tones of Mazateco seem even closer together than the four contrastive end points of the intonations of American English. The organization of the pitch contrasts is likewise different: in Mazateco the pitches are largely lexical, basic to specific morphemes, and contributing to lexical meanings, whereas in English the pitches are superimposed upon the sequences of consonants and vowels of the sentence in such a way as to carry advenitious meanings, or "shades of meaning."

For references to Mixteco and English, see footnotes 5 and 1.

Before listing and illustrating the specific clusters of tones which occur, a number of illustrations will be given showing various contrasts between level tones and clusters of diverse tones: te^{1} *he will dance*, te^{2} *he dances*, te$^{2-3}$ *I dance*, te$^{4-3}$ *wide*, te^{3} *ten;* čą^{2} *brown*, čą$^{4-2}$ *a cramp*, čą$^{4-3}$*-undoubtedly*, čą^{4} *the Mazateco month of 20 days;* ni^{3}nto^{2} *slippery*, ni^{4}nto$^{3-4}$ *pimple*, ni^{3}nto^{3} *mountain*, also *needle;* ška$^{1-3}$ *native-style trousers*, ška$^{3-4}$ *a certain large water animal*, ška^{4} *leaf;* či^{4}nka^{4} *pig*, či^{4}nka$^{3-4}$ *shirt*, hči^{1}nka^{3} *old;* šo^{4}nko^{4} *fist*, šo^{4}nko$^{1-3}$ *sister-in-law* (*sister of husband*), šo^{3}nko$^{1-3}$ *chewing gum*; ?yoi$^{4-3}$ *you* (*sing.*) *grind*, ?yoi$^{2-3}$ *you* (*sing.*) *drink*, ?yoi^{3} *we* (*excl.*) *grind*, ?yoi$^{2-4}$ *we* (*excl.*) *drink;* s?ioi$^{1-3}$ *you* (*sing.*) *will grind*, s?oi^{4} *you* (*sing.*) *will drink*, s?ioi$^{1-4}$ *we* (*excl.*) *will grind*, s?ioi^{4} *we* (*excl.*) *will drink;* ?yoa$^{4-2}$ *we* (*incl.*) *grind*, ?yoa^{2} *we* (*incl.*) *drink;* ?yo$^{4-3}$ *you* (*pl.*) *grind*, ?yo$^{2-3}$ *you* (*pl.*) *drink;* s?oia^{1} *we* (*incl.*) *will grind*, s?ioa$^{4-2}$ *we* (*incl.*) *will drink;* s?io$^{1-3}$ *you* (*pl.*) *will grind*, s?io$^{4-3}$ *you* (*pl.*) *will drink;* v?e^{1}-le^{4} *he hits him*, v?e^{2}-le$^{4-2}$ *we* (*incl.*) *hit him*, v?e$^{4-3}$-le^{4} *I hit him*, v?e$^{4-3}$-le$^{2-3}$ *I hit you* (*sing.*); k?oe$^{4-2}$-le^{4} *he will hit him*, k?oe^{1}-le$^{4-2}$ *we* (*incl.*) *will hit him*, k?oe$^{4-3}$-le^{4} *I will hit him*, k?oe$^{4-3}$-le$^{2-3}$ *I will hit you* (*sing.*); si^{1}he^{1}-le^{4} *he asks him*, si^{4}he^{1}-le$^{4-2}$ *we* (*incl.*) *will ask him*, si$^{4-2}$he^{1}-le^{4} *he will ask him*, si$^{4-3}$he^{1}-le^{4} *I ask him*, si$^{4-3}$he^{1}-le$^{2-3}$ *I ask you.*

Clusters of two tones on the nucleus of a syllable which is composed of a single morpheme are quite rare:

The tone cluster 4-2 has been found on eleven morphemes: ti$^{4-2}$ *bowl*, toi$^{4-2}$ *slowly*, nče$^{4-2}$ *cooked whole corn*, čą$^{4-2}$ *a cramp*, čhǫ$^{4-2}$ *woman*, čhao$^{4-2}$ *egg*, nça$^{4-2}$ *crow*, cę$^{4-2}$ *wolf*, nai$^{4-2}$ *devil*, to^{3}ce$^{4-2}$ *grape*, ntia$^{4-2}$ *road.*

The cluster 2-4 occurs within only two morphemes in the material at hand: khi$^{2-4}$ne^{2} *he jumps*, va^{3}ya$^{2-4}$kǫ^{3} *he notifies in advance.*

The cluster 4-3 is much more frequent: so$^{4-3}$ *warm*, č?į^{3}vhi$^{4-3}$ *whooping cough*, te$^{4-3}$ *wide*, ta^{2}ha$^{4-3}$ *hard*, ški$^{4-3}$ *medicine*, ši$^{4-3}$ *sweet*, se$^{4-3}$ *he sings*, and many others.

Occasionally a 1-3 glide occurs in unanalyzed place names: nta$^{1-3}$šo$^{1-3}$ *Chicholta.* This same glide also appears on the morpheme *ya^{1} *wood* in the middle of a few unanalyzed compounds: ya$^{1-3}$hca$^{1-3}$ *top beam of a house,* ya$^{1-3}$ma^{1} *avocado.* These glides may prove to be remnants of the tone of two morphemes.

The theoretically possible two-tone combinations of the four tones would be the following twelve clusters: *1-2, 1-3, 1-4; 2-3, 2-4; 3-4; 4-3, 4-2, *4-1; 3-2, *3-1; *2-1. Within single morphemes only three or four of them occur, as has just been illustrated. When a morpheme division occurs within the syllable nucleus, however, the following are found:

1-3: si^{1}ska^{1} *he plays* + -a^{3} *first pers. sing. dep. subj. pronoun* > si$^{4-3}$ska$^{1-3}$ *I play;*

*na^{4}hme^{1} *corn* + -^{3} *end of close-knit noun phrase* > na^{4}hme$^{1-3}$ *corn;*

v$^{?}$e^{1}hte^{1} *he wraps up* + -i^{3} *sec. per. sing. dep. subj. pro.* > v$^{?}$e^{2}htai$^{1-3}$ *you wrap up.*

1-4: v$^{?}$e^{1}hte^{1} *he wraps up* + -i^{4} *first per. pl. excl. dep. subj. pro.* > v$^{?}$e^{2}htai$^{1-4}$ *we (excl.) wrap up.*

2-3: v$^{?}$e^{1}sǫ^{2} *he puts on to heat* + -o^{3} *sec. per. pl. dep. subj. pro.* > v$^{?}$e^{2}sǫ$^{2-3}$ *you (pl.) put on to heat,*

*šo^{2} *nail* + -^{3} *end of close-knit noun phrase* > šo$^{2-3}$ *nail.*

2-4: v$^{?}$e^{1}sǫ^{2} *he puts on to heat* + -i^{4} *first per. pl. excl. dep. pro.* > v$^{?}$e^{2}sǫi$^{2-4}$ *we (excl.) put on to heat.*

3-4: v$^{?}$e^{1}hǫ^{3} *he shaves* + -i^{4} *first per. pl. excl. dep. subj. pro.* > v$^{?}$e^{2}hǫi$^{3-4}$ *we (excl.) shave.*

*na^{4}čą^{3} *bed* + -^{4} *end of close-knit noun phrase* > na^{4}čą$^{3-4}$ *bed.*

4-3: ši^{1}nkhį^{1} *his family* + -o^{3} *sec. per pl. dep. subj. pro.* > ši^{2}nkįǫ$^{4-3}$ *your (pl.) family;*

v$^{?}$a^{3}hę^{4} *he picks* + -o^{3} *sec. per. pl. dep. subj. pro.* > č$^{?}$a^{2}hąǫ$^{4-3}$ *you (pl.) pick.*

4-2: v$^{?}$a^{3}hę^{4} *he picks* + -a^{2} *first per. pl. incl. dep. subj. pro.* > č$^{?}$a^{2}hę$^{4-2}$ *we (incl.) pick;*

ši^{1}nkhį^{1} *his family* + -a^{2} *first per. pl. incl. dep. subj. pro.* > ši^{2}nkią$^{4-2}$ *our (incl.) family.*

3-2: si^{1}ča^{3} *he loses* + -a^{2} *first per. pl. incl. dep. subj. pro.* > ni^{2}ča$^{3-2}$ *we (incl.) lose,*

thę^{3} *his forehead* + -a^{2} *first per. pl. incl. dep. subj. pro.* > thę$^{3-2}$ *our (incl.) foreheads).*

It should be noted that more types of clusters of the lower tones occur than of the higher tones; *1-2, *2-1, *3-1, and *4-1 do not occur at all; five of the eight clusters include tone four, and five include tone three, whereas only two include tone one and four include tone two.

Clusters of three tones on a single syllable are rare. In every recorded instance, the first two tones represent the cluster 4-2 on the first morpheme, whereas the second morpheme, fused to it, may contain tones 3 or 4:

4-2-4: va^{1}ntia$^{4-2}$ *he travels* + -i^{4} *first per. pl. excl. dep. subj. pro.* > vha^{3}ntiai^{4-2-4} *we (excl.) travel,*

4-2-3: va^{1}ntia$^{4-2}$ *he travels* + -a^{3} *first per. sing. dep. subj. pro.* > va$^{4-3}$-ntia^{4-2-3} *I travel.*

Clusters of two tones must be analyzed as sequences of two or three tone phonemes, rather than single but phonetically complex gliding tone phonemes, for the following reasons: (1) The beginning and ending points of the glides can be phonetically equated with the level tones of the system, while (2) the combination of tones form an analogous but contrastive pattern in groups such as 2-4 versus 4-2, 3-4 versus 4-3, 2-3 versus 3-2; and (3) none of the sequences are completely unique in structure, but are paralleled by others which are the same except for the substitution of the precise tone under consideration. Furthermore, (4) morphological barriers come in the middle of most of the glides, while those glides which do not have morphological junctures

in the middle of them are paralleled by tone glides in which such morphological breaks do so occur.

In a cluster of two tones, the first is best considered the principal one, and the second subordinate, for the following reasons: (1) There is greater diversity of permitted occurrence of tones as the first of the cluster, since any of the four may be first, but tone 1 may not be second. (2) The first tone is usually the more prominent of the two (occasionally—especially with rising glides—the second may be of equal prominence, however). (3) The second element is very frequently a subordinate grammatical element fused to the stem tone represented by the first tonal element.

In a cluster of three tones, the third is best considered subordinate to the cluster of the first two, for the following reasons: (1) The third tone is likely to be phonetically weak. (2) The permitted tones in the third position in the cluster are limited to tones 3 and 4. (3) The third tone is always a part of a subordinate morpheme fused to a stem which contains a tonal cluster.

The immediate constituents of a tonal cluster, then, break first between the second and third tones, and then between the first and second tones. In the syllable -ntiao$^{4\text{-}2\text{-}3}$ (from ntia$^{4\text{-}2}$ *road*) of khoa^{1}ntiao$^{4\text{-}2\text{-}3}$ *you (pl.) will travel*, the immediate constituents may be symbolized thus: (n/t)([{i/a}{o}]-[{$^{4}/_{2}$}{^{3}}]). Compare also the constituents of nc$^{?}$oai$^{3\text{-}4}$ *our (excl.) stomachs:* ([n][c/$^{?}$])([{o/a}{i}][$^{3}/_{4}$]); the constituents of -nč$^{?}$-oai$^{1\text{-}3}$ (from nč$^{?}$oe^{1} *he hears*) in ni^{2}khi^{3}-nč$^{?}$oai$^{1\text{-}3}$ *you (sing.) notify* are similar.

7. The isolated Mazateco syllable may be composed of a nucleus of from one to three vowels, with from one to three tones superimposed upon the nucleus as a whole (but without one-to-one correlation with the vowels of that nucleus), and of a margin of from one to three consonants.

When the margin is composed of two consonants, one of them is the principal one and the other is subordinate to it; the subordinate consonant may precede or follow the principal one. When the margin is composed of three consonants, two of them are subordinate to the third, and they may both occur before the principal consonant, or one after and the other before it. In a cluster of three consonants, the first break of immediate constituents occurs following the first subordinate consonant.

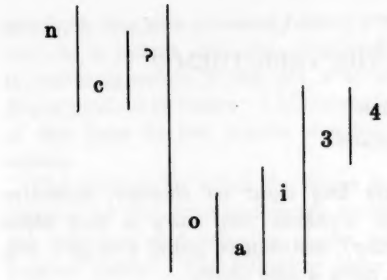
The nucleus has a break between its vowels and tones for its first layer of immediate constituents.

When two vowels are contained in the nucleus, the second is the principal one. If three vowels are present, the immediate constituents break between the second and third.

When two tones are contained in the nucleus, the first is the principal one. If three tones are present, the immediate constituents break between the second and third.

The layers of immediate constituents in the syllable may be indicated by the following sample formulas: (č)(o/^{4}) *animal*, (t/h)(o/^{4}) *gun*, ([?][n/t])(o/^{3}) *rotten*, (y)([a/o][^{3}]) *sharp*, (k)([{o/a}{i}][^{4}]) *he will go*, (s)([o][$^{4}/_{3}$]) *warm*, (s/?)([o/i][$^{1}/_{3}$]) *you will grind*, (k/h)([{o/i}{a}][$^{1}/_{3}$]) *I will go*, ([n/t])-([{i/a}{i}][{$^{4}/_{2}$}{^{4}}])—the morpheme ntia$^{4\text{-}2}$ *road* in khoa^{1}ntiai$^{4\text{-}2\text{-}4}$ *we (excl.) will travel.*

The preceding formulas indicate the successive layers of immediate constituents. In order to symbolize the subordination of one constituent to another, however, a different symbolism is necessary. In the following diagram, subordinate constituents will be raised higher than the principal ones to which they are subordinated; vertical lines separate the layers of immediate constituents:



In context, Mazateco syllables tend to be divided as they would be in isolation. In the middle of utterances of normal or rapid speech, however, the first consonant of a cluster at the beginning of one syllable may pass partially to the preceding syllable. The foreigner in speaking the language, however, is much more likely to err by transferring too much rather than too little of the consonant to the preceding syllable.

8. One may now inquire, "What is the significance of this approach, for languages other than Mazateco?" The answer: It may ultimately explain various problems in which phonetic sequences of sound appear to have simultaneously both phonemic unity and phonemic complexity. In English, for example, [a^{I}], [a^{u}], [ɔ^{I}] are phonetically complex. Because of their contrasts with each other, and for other reasons,[8] it seems best to consider them sequences of phonemes, i.e. /ai/, /au/, /ɔi/. On the other hand, they act in distribution much like [e^{I}], [o^{u}], [i^{vi}], [u^{vu}], which may best be analyzed as single phonemes,[9] i.e. /e/, /o/, /i/, /u/. The explanation of this apparent dilemma appears to be that the phonemic sequences /ai/, /au/, /ɔi/ constitute vocalic nuclei; these phonemically complex nuclear elements have a distribution which is similar to that for the phonemically simple nuclei /e/, /o/, /i/, /u/.

Similarly, in Totonaco, a sequence of vowel plus glottal stop may best be interpreted as a nuclear inner layer comprised of a sequence of two phonemes, i.e. /V?/, rather than a single laryngealized ("glottalized") vowel.[10]

These three instances, Mazateco, English, and Totonaco, lead me to postulate the following: *Sounds in syllables (or morphemes) may occur in structural layers, or in series of "immediate constituents"; an inner core comprised of a sequence of phonemes may, in larger structural sequences, on a higher layer of distribution, act as a single unit.*

We need further criteria before such immediate constituents—or those of syntax—can be analyzed independently and uniformly by various workers. This difficulty, should not, however, prevent us from recognizing the existence of some such structural layering.

[8] Presented in part in an article by KLP, on English vowels, to appear soon in Language.

[9] Ibid.

[10] See Herman P. Aschmann, Totonaco Phonemes, in IJAL 12.34–43 (1946); much of Aschmann's phonetic data has been checked with his informant by KLP.

YUMA V: CONJUGATION OF THE VERB THEME[1]

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43. Types of plural
44. Conjugation for distributive object
45. Collective plurals of simple-stem and reduplicated-stem themes
46. Distributive plurals of simple-stem themes
47. Collective plurals of prefix-stem and developed themes
48. Distributive plurals of prefix-stem themes
49. Collective and distributive plurals of themes indicating position
50. Collective and distributive plurals of reduced themes
51. Atypical and irregular conjugations

43. Types of plural. Verb themes of intransitive meaning are normally conjugated for the collective (subject) and distributive (subject) plurals.[2] Verb themes of transitive meaning are normally conjugated for both these plurals and for distributive object (with singular subject).

The distinction in meaning between the collective and distributive plural forms is fairly clear. The collective plural form indicates action taken by a group of people together, on a single object, or at the same time and place. The distributive plural form indicates action taken by a number of people severally, or each on an object of his own, or at different times and places. The distinction emerges clearly in such forms as nʸu·wíck *he owns it*, collective plural nʸu·wíc·cək *they own jointly*, distributive plural nʸa·cu·wí·cək *they own severally;* a·pák *he carries long object on shoulder*, collective plural a·pákcək *they carry a long object (together)*, distributive plural a·cu·pá·k *they each carry a long object.*

The distributive object theme indicates primarily action performed on a number of different objects: nʸi·ká·mək *he conquers him*, dist. obj. nʸi·kacámək *he conquers them;* ta·náwk *he makes a noise with it*, dist. obj. ta·ná·wk *he makes various noises with it.* Perhaps the clearest exemplification of this meaning of the distributive object form is to be found in kinship terms: nʸa?áwk *you are my son's child* (lit., *I call you son's child*), nʸi·nʸa?á·wk *you are my son's children* (lit., *I call ye son's children*); ?anʸmanaví·k *I am your father's older brother* (lit. *you call me father's older brother*), nʸi?anʸmanatvé·k *we are your father's older brothers* (lit., *you call us father's older brothers*). Contrast the collective plural form nʸanaví·ck *you are our father's older brother* (lit., *we call you father's older brother*).

The distributive object theme may also indicate action performed on a number of successive occasions: a·šápk *he makes an incision*, dist. obj. a·cšá·pk *he makes several incisions;* caxavasúyk *he blows*, dist. obj cacxavasó·yk. *he blows several puffs;* in several places successively: axʷélʸk *he digs*, dist. obj. axʷá·lʸk *he digs here and there;* a·taxʷínʸk *he kindles fire*, dist. obj. a·tatxʷ-ínʸk *he kindles it in several places;* or by habit, inclination, or profession: ?aci·mák *he dances*, dist. obj. ?aci·cmá·ck *he is a dancer;* a?érək *he is startled*, dist. obj. ac?í·rək *he is easily scared;* a·nʸórək *he writes*, dist. obj. a·cnʸú·rək *he is a clerk.*

In a few cases, a collective plural theme is formed from the distributive object theme: šaqí·rək *he plows*, dist. obj. šatqérək *he plows a crooked furrow* > coll. plu.

[1] References to the preceding parts of the Yuma study are: I (1 to 11), II (12 to 18), III (19 to 32), IV (33-42); See IJAL 12.25-33, 147-51, 204-12 (1946) and 13.18-30 (1947).

[2] For the sake of convenience, collective plural forms will be glossed as *two* (subject) and distributive plural forms as *many* (subject).

šatqércək *they plow a crooked furrow;* xʷaʔá·vək *she is jealous,* dist. obj. xʷacʔávək *she is jealous by nature* > coll. plu. xʷacʔávcək *they are jealous by nature.* Collective plurals of this type do not require separate discussion.

The methods by which the theme is conjugated for the plurals depends partly on the structure and meaning of the unconjugated theme. The following order will be followed in discussion: conjugation for distributive object; collective plurals of simple-stem and reduplicated-stem themes; distributive plurals of simple-stem themes; collective plurals of prefix-stem and developed themes; distributive plurals of prefix-stem themes; collective and distributive plurals of themes indicating position; collective and distributive plurals of reduced themes; irregular and atypical plurals.

A number of verbs form only one plural, which may be formally either the collective or distributive. Ordinarily there seems no reason why both plurals should not be formed, or why one plural should be preferred to the other. The following, for example, are verbs which form only the collective plural: *aδáw *to take,* *anʸí·lʸq *to swallow,* *axʷí·v *to give off odor,* *i·má *to dance,* *kacó *to pound lightly,* *canʸé *to chew on,* *taʔapílʸ *to heat,* *ta·δó·yv *to sharpen (edged tool),* *u·kaná·v *to inform.*

The following are verbs which form only the distributive plural: nʸam-*é·v *to work with, bother with;* wa-*kavár *to be fond of,* *a·lʸáqv *to fall,* *a·vkʸéw *to carry long heavy object,* wa-*aráv *to forbid;* *aʔér *to be startled,* *aʔóx *to cough.*

There are, however, three types of verb theme which fairly regularly form the collective plural but not the distributive plural. These are (1) themes indicating state or condition rather than action, (2) themes containing the benefactive suffix -y, and (3) themes formed from noun stems.

Examples of themes of the first type are *arúv *to be dry,* *mavís *to be soft,* *nʸí·lʸ *to be black,* *xacú·r *to be cold,* *ʔaxóṭ *to be good,* *lʸu·vév *to be equal,* *ašáy *to be fat.* With this group are to be included such reduplicated forms as *qʷeraqʷér *to be sharp-pointed,* *kʸelakʸél *to be high, empty (house),* *ʔoraʔór *to be spherical,* *qaraqár *to be thin-waisted.* In contrast with these cases we have such verbs as *ʔaqʷá·s *to be weak,* *aráw *to be fast,* *ʔakúc *to be old,* and ʔac-*aráv *to be sick,* which form both the collective and distributive plural.

Examples of themes of type 2 are *awé·y *to do for someone,* *aštó·y *to pick things up for someone,* *caváwy *to plant for someone,* *xalʸkʷá·y *to hunt for someone.* The corresponding underlying themes (*awí/awé *to do;* *aštú/aštó *to pick things up,* *caváw *to plant,* and *xalʸkʷá· *to hunt*), it should be noted, form both the collective and the distributive plural, although their benefactive counterparts do not.

Examples of themes of type 3 are *malʸaqí· *to lament (man)* < malʸaqé *throat, voice,* *masaʔí· *to be muddy* < masʔé· *mud,* *ʔi·páy *to be alive* < ʔi·pá· *man, male,* *nʸuʔá·lʸv *to dress* < nʸuʔá·lʸ *his clothes,* *nʸaʔu·tí·šv *to be armed with a bow* < ʔu·tí·š *bow,* *ya·vu·mí·v *to be bearded* < ya·vu·mé *beard.* Contrast with these, however, *atúyv *to be pregnant* < i·tó *belly,* ató *center* (?), which forms the distributive but not the collective plural.

Developed themes normally are conjugated only for the collective plural.

44. Conjugation for distributive object. There are three types of conjugation for distributive object: (a) by ablaut of the accented vowel of the stem, (b) by infixation of <t>/<c>[3] before the first consonant

[3] The infix <c> is used with simple-stem themes except those occurring with adhering prefix ši·- and with prefix-stem themes containing a prefix k-, c-, a·-, u·-, a·c-, u·c-, v-, x-, xʷ-, kʷ-, nʸ-, m-, p-, qʷ-, var-, kʷar-, or sanʸ-. The infix <t> is used with prefix-stem themes containing a prefix t-, š-, n-, s-, or kʷan-. In themes contain-

of the stem, and (c) by ablaut and infixation together.

In all three types of conjugation the stem may be concurrently modified by the addition of a consonantal increment -c/-t.

All three types of conjugation are used with simple stem themes and prefix-stem themes.[4] Type (b) is the most seldom used of the three. Types (a) and (c) are of about equal frequency with simple-stem themes, while type (c) is much the most frequent with prefix-stem themes.

The following examples illustrate type (a): *atá·p (*atá·p) *to put down here and there* < *atáp *to throw, put down*, *ca·tá·qš (*c-a<a·>tá·qš) *to flip several* < *ca·táqš *to flip*, *akʸá·s (*akʸá·s) *to call several grandnephews (w.s.)* < *akʸés *to call someone grandnephew (w.s.)*, *šakʸelakʸá·l (*škʸelakʸá·l) *to empty (houses)* < *šakʸelakʸél *to empty (house)*, *aví·ṭ (*aví·ṭ) *to call several younger brother's children (m.s.)* <*avéṭ *to call someone younger brother's child (m.s.)*, *taspí·r (*t-aspí·r) *to tighten several* < *taspér *to tighten*, *ašíˀʸ (*ašíˀʸ) *to fry several* < *ašíˀʸ *to fry*, *tamaví·s (*t-maví·s) *to soften several* < *tamavís *to soften*, *akʸá·c (*akʸá·c) *to call several sister's grandchildren (m.s.)* < *akʸíc *to call someone sister's grandchild (m.s.)*, *nakʸá·c (*n-akʸá·c) *to call several grandmother's brothers* < *nakʸíc *to call someone grandmother's brother*, *taʔa·xú·ṭ (*t-ʔa<a·>xú·ṭ) *to make several good* < *taʔa·xóṭ *to make something good*, *taʔuraʔú·r (*t-ʔuraʔú·r) *to make several spherical* < *taʔoraʔór *to make something spherical*, *taʔa·kú·c (*t-ʔa<a·>kú·c) *to bring several up* < *taʔa·kúc *to bring up*, *ta·šá· (*t-a<a·>šá·) *to fatten several* < *ta·šáy *to fatten*, *šavʔó· (*š-avʔó·) *to erect (posts)* < *šavʔáw *to erect (post)*.

With consonantal increment -c/-t: *acá·c (*acá·c *to lay bunches down here and there* < *acé *to lay a bunch down*, *así·t (*aší·t) *to name several* < *ašé *to name*, *anaʔóc (*anaʔóc) *to call several older sister's children (w.s.)* < *anaʔó·y *to call someone older sister's child (w.s.)*.

The following examples illustrate type (b): *acnʸúv (*a<c>nʸúv) *to be a fighter* < *anʸúv *to fight*, *acnʸú· (*a<c>nʸú·) *to be a baker* < *anʸú· *to bake*, *cackʸéw (*c-a<c>kʸéw) *to bite several times* < *cakʸéw *to bite*, *šatamús (*š-a<t>mús) *to crumble several* < *šamús *to crumble*, *xacalʸqíc (*x-a<c>lʸqíc) *to grasp with both hands* < *xalʸqíc *to grasp*, *šatalwáx (*š-a<t>lwáx) *to punch holes with the finger* < *šalwáx *to punch a hole with the finger*, *u·ckaδóm (*u·-<c>kaδóm) *to send in different directions* < *u·kaδóm *to point something towards there*, *a·tatxʷínʸ (*a·-t-a<t>xʷínʸ) *to kindle in several places* < *a·taxʷínʸ *to kindle*.

With consonantal increment -c/-t: ya-*štá·lʸc (ya-*š-<t>á·lʸc) *to have an habitual craving for* < ya-*šá·lʸ *to crave*, *šaté·ck (*š-<t>é·c-k) *to bring things closer* < *šé·k *to bring closer*, *šaté·cm (*š-<t>é·c-m) *to push things away* < *šé·m *to push away*, *tatkʷéc (*t-a<t>kʷéc) *to awake from time to time* < *takʷé *to awake*, *cacayécm (*c-a<c>yéc-m) *to turn several loose* < *cayém *to turn loose*, *kʷacakʸá·cv (*kʷ-a<c>kʸá·c-v) *to ask several people for things* < kʷakʸá·v *to ask for things*, *u·cšát (*u·-a<c>šát) *to sting several times* < *u·šá *to sting*.

The following examples illustrate type (c): *tatʔá·m (*t-a<t>ʔá·m) *to turn several upside down* < *taʔám *to turn upside down*, *a·calʸʔá·k (*a·-a<c>lʸʔá·k) *to befriend people* < *a·lʸʔák *to befriend*, ši·-*atwá·nʸ

ing two prefixes, the choice of infix is determined by the prefix which stands closest to the stem.

If the infix directly precedes a consonant cluster of the stem, an inorganic vowel a is inserted between the infix and the first consonant of the stem. The inorganic vowel may also occur when the infix precedes a single consonant. Under these conditions its presence cannot be accounted for by the rules governing consonant clusters, but must be construed as an irregularity.

[4] Reduplicated-stem themes and developed themes are normally not conjugated for distributive object.

(ši·-*a<t>wá·nʸ) *to call several older sister's daughters (m.s.)* < ši·-*awénʸ *to call someone older sister's daughter (m.s.)*, *a·satkʸá·v (*a·-s-a<t>kʸá·v) *to fill several half full* < *a·sakʸév *to fill half full*, *acxí·r (*a<c>xí·r) *to tie people up, to be a policeman* < *axér *to tie up*, *tatqʷeraqʷí·r (*t-<t>qʷeraqʷí·r) *to sharpen several* < *taqʷeraqʷér *to sharpen to a point*, *cackʸí·k (*c-a<c>kʸí·k) *to crack several with the teeth, to habitually crack with the teeth* < *cakʸík *to crack with the teeth*, *tatʔapí·nʸ (*t-<t>ʔapí·nʸ) *to warm things* < *taʔapínʸ *to warm*, *tatxavá·k (*t-<t>xavá·k) *to habitually have two of everything* < *taxavík *to double, to increase to two*, *u·satkʸá·nʸv (*u·-s-a<t>kʸá·nʸv) *to be a kidnapper* < *u·sakʸínʸv *to kidnap*, *tatpú·m (*t-a<t>pú·m) *to burn several* < *tapóm *to burn*, nʸam-*kacvaʔú·r (nʸam-*k-<c>vaʔú·r) *to be always successful* < nʸam-*kavaʔór *to succeed*, *acšú·c (*a<c>šú·c) *to call several younger brothers* < *ašúc *to call someone younger brother*, *tatrú·v (*t-a<t>rú·v) *to dry things, to be a drier* < *tarúv *to dry*, *tatpó·y (*t-a<t>pó·y) *to kill several* < *tapúy *to kill*, *u·tataraʔó·y (*u·-t-<t>raʔó·y) *to fix things* *u·taraʔúy *to fix, prepare*, nʸi·-*kacám (nʸi·-*k-<c>ám) *to defeat many* < nʸi·-*ká·m *to defeat*, *kacanáv (*k-a<c>náv) *to tell stories, to be a gossip* < *kaná·v *to tell of, relate*, *u·cacpá· (*u·-c-a<c>pá·) *to increase several* < *u·capé· *to increase*, *a·cqéš (*a·-a<c>qéš) *to make marks on, to mark up* < *a·qí·š *to make a mark on*, *u·kackʷén (*u·-k-a<c>kʷén) *to go around sev. times* < *u·kakʷí·n *to go around*, *natvé· (*n-a<t>vé·) *to call sev. father's older brothers* < *naví· *to call someone father's older brother*, *varacpé· (*var-a<c>pé·) *to call sev. brother's children (w.s.)* < *varapí· *to call someone brother's child (w.s.)*, *vaccá· (*v-a<c>ca·) *to call sev. daughters (m.s.)* < *vací· *to call someone daughter (m.s.)*, *u·canʸá· (*u·-a<c>nʸá·) *to call sev. females married to one's male relatives* < *u·nʸí *to call someone female married to one's male relative*, *xʷacnʸóv (*xʷ-a<c>nʸóv) *to be a dodger* < *xʷanʸó·v *to dodge*, *acsá· (*a<c>sá·) *to habitually eat (meat), to be a (meat-) eater* < *asó· *to eat (meat)*, *tatδón (*t-a<t>δón) *to dip one by one* < *taδú·n *to dip*, *u·ctórv (*u·-a<c>tórv) *to habitually play hoop-and-pole game* < *u·tú·rv *to play hoop-and-pole game*, *vacšá· (*v-a<c>šá·) *to be a guard (by profession)* < *vašáw *to guard*, *u·cacvá· (*u·-c-a<c>vá·) *to put people in charge* < *u·caváw *to put someone in charge;* compare also: *šatʔi·pá· (*š-<t>ʔi·pá·) *to revive sev.* < *šaʔi·páyc *to revive*.

With consonantal increment -c/-t: ʔac-*i·cmá·c (ʔac-*i·<c>má·c) *to be a dancer* < ʔac-*i·má *to dance*, *cackaná·c (*c-<c>kaná·c) *to make decisions, to be a judge* < *cakaná *to make a decision*, *ackʸá·c (*a<c>kʸá·c) *to be a hunter* < *akʸé *to shoot*, *tatwá·c (*t-a<t>wá·c) *to always grind* < *tawé *to grind*, *cacasví·c (*c-a<c>sví·c) *to wipe sev.* < *casvé *to wipe*, *cackakʷí·c (*c-<c>kakʷí·c) *to question people* < *cakakʷé *to ask, question*, *u·tatanʸíc (*u·-t-a<t>nʸíc) *to ignite in several places* < *u·tanʸé *to cremate*, *satkʷalʸxíc (*s-<t>kʷalʸxíc) *to tie knots* < *sakʷalʸxé *to tie a knot*, *acsí·c (*a<c>sí·c) *to drink habitually* < *así/asé *to drink*, *cacamí·c (*c-a<c>mí·c) *to lay sev. down* < *camí/camé *to lay down long object*, *kacanʸúc (*k-a<c>nʸúc) *to follow from one trail to another* < *kanʸó *to follow trail*, *a·cqaxnú·c (*a·-a<c>xnú·c) *to be susceptible to disease* < *a·xnó *to become infected*, *šatamác (*š-a<t>mác) *to have dreams, be a dreamer* < *šamá· *to dream*, alʸ-*cackaméc (alʸ-*c-<c>kaméc) *to put bunches of things on the edge* < alʸ-*cakamé· *to put a bunch on the edge*, ki·-*acayíc (ki·-*a<c>yíc) *to call sev. friends (male)* < ki·-*ayí· *to call someone friend (male)*, ši·-*atayíc (ši·-*a<t>yíc) *to call sev. friends (female)* < ši·-*ayí· *to call someone friend (female)*, *šatamaδíc (*š-<t>maδíc) *to be unconscious of things* < *šamaδí· *to not know*, *u·cšúc (*u·-a<c>šúc) *to call sev. males married to one's female relatives* < *u·šú· *to call someone male married to one's female rela-*

tive, *sata?óc (*s-a<t>?óc) *to call sev. children (w.s.)* < *sa?áw *to call someone child (w.s.),* *acl^{y}ác (*a<c>l^{y}ác) *to call sev. female cross cousins* < *al^{y}áy *to call someone female cross cousin,* *n^{y}a·cavéc (*n^{y}-a·<c>véc) *to have as wives* < *n^{y}a·vé·y *to have as a wife,* *cacší·t (*c-a<c>ší·t) *to challenge sev.* < *cašé *to challenge;* compare also: wi·-*a·cavkóc (wi·-*a·-a<c>-vkóc) *to call sev. paternal half-siblings* < wi·-*a·vk^{y}áw *to call someone paternal half-sibling.*

TABLE 1

Stem Type		Stem	Adhering Prefix	Thematic Prefix I	Thematic Prefix II	Inorganic Vowel	Initial Stem Vowel	Infix	Inorganic Vowel	Stem Minus Initial Vowel ± Vocalic Ablaut	Consonantal Increment	Thematic Suffix	Theme and Meaning
Simple-Stem Themes	vcv́,	aván					a			vá·n			avá·n *to call sev. sister's sons (m.s.)*
	vcv́c,												
	vcv́cc	acé					a			cá·	c		acá·c *to lay bunches down here and there*
		ašé					a			ší·	t		aší·t *to name sev.*
		an^{y}úv					a	c		n^{y}úv			acn^{y}úv *to be a fighter*
		al^{y}úl^{y}					a			l^{y}ú·l^{y}			acl^{y}ú·l^{y} *to be a cook*
		ak^{y}é					a	c		k^{y}á·	c		ack^{y}á·c *to be a hunter*
		ayí·	ši·				a	t	a	yí	c		ši·-atayíc *to call sev. friends (female)*
Prefix-Stem Themes	v́,	é·			š	a		t		é·	c	m	šaté·cm *to push things away*
	v́c	á·l^{y}	ya		š			t		á·l^{y}	c		ya-štá·l^{y}c *to have an habitual craving for*
		á·m	n^{y}i·		k	a		c		ám			n^{y}i·-kacám *to defeat many*
	vcv́,	an^{y}áq			u·		a			n^{y}á·q			u·n^{y}á·q *to play jokes*
	vcv́c,	apóṭ			k		a	c		póṭ			kacpóṭ *to scatter things*
	vcv́cc	ayé			c		a	c	a	yé	c	m	cacayécm *to turn sev. loose*
		ašá			u·		a	c		šá	t		u·cšát *to sting sev. times*
		a?ám			a·		a	c		?á·m		p	a·c?á·mp *to bend over again and again*
		an^{y}é		u·	t		a	t	a	n^{y}í	c		u·tatan^{y}ic *to ignite in sev. places*
		ašé			c		a	c		ší·	t		cacší·t *to challenge sev.*
	vccv́,	aspér			t		a			spí·r			taspí·r *to tighten sev.*
	vccv́c,	an^{y}?úcq			k		a	c	a	n^{y}?úcq			kacan^{y}?úcq *to deform sev.*
	vccv́cc	axpál^{y}			š		a	t	a	xpá·l^{y}			šataxpá·l^{y} *to attach sev.*
		asvé			c		a	c	a	sví·	c		cacasví·c *to wipe sev.*
	cvcv́,	?anéx			t	a				?aní·x			ta?aní·x *to weigh sev.*
	cvcv́c,	kašóm			u·			c		kašóm			u·ckašóm *to send in different directions*
	cvcv́cc	laxóx		u·	t	a		t		laxú·x			u·tatlaxú·x *to empty sev.*
		kaná			c	a		c		kaná·	c		cackaná·c *to make decisions*

The types of conjugation for distributive object are summarized in Table 1.

45. Collective plurals of simple-stem and reduplicated-stem themes. Simple-stem and reduplicated-stem themes of intransi-

tive meaning[5] are conjugated for the collective plural in one of three ways: (a) by ablaut of the accented vowel of the stem, (b) by ablaut of the accented vowel of the stem plus modification of the stem by a final consonantal increment -c, and (c) by prefixation of u·-.

Examples of type (a) are: *ʔaxá·s *to be greasy* (coll. plu.) < *ʔaxás *to be greasy*, *ʔalʸaqʷá·q *to be bitter* (coll. plu.) < *ʔalʸ-aqʷáq *to be bitter*, *ayá·r *to fly* (coll. plu.) < *ayér *to fly*, *kʸelakʸá·l *to be empty* (coll. plu.) < *kʸelakʸél *to be empty*, *aspí·r *to be strong* (coll. plu.) < *aspér *to be strong*, *qʷeraqʷí·r *to be sharp-pointed* (coll. plu.) < *qʷeraqʷér *to be sharp-pointed*, *ʔapí·lʸ *to be hot* (coll. plu.) < *ʔapílʸ *to be hot*, *ʔasaʔí·lʸ *to be salty* (coll. plu.) < *ʔasaʔílʸ *to be salty*, alʸ-*askʸá·y *to continue to be the same* (coll. plu.) < alʸ-*askʸí· *to continue to be the same*, *ʔaqó·l *to be long* (coll. plu.) < *ʔaqól *to be long*, *ʔanʸó·ym *to be ugly* (coll. plu.) < *ʔanʸóym *to be ugly*, *apú·m *to burn, be burning* (coll. plu.) < *apóm *to burn*, *ʔuraʔú·r *to be spherical* (coll. plu.) < *ʔoraʔór *to be spherical*, *apó·y *to die* (coll. plu.) < *apúy *to die*, *arú·v *to be dry* (coll. plu.) < *arúv *to be dry*, *ʔakú·c *to be old* (coll. plu.) < *ʔakúc *to be old*, *ašá· *to be fat* (coll. plu.) < *ašáy *to be fat*, *maxá· *to become young men* (coll. plu.) < *maxáy *to become a young man;* compare also: *paʔi·pá·y/paʔi·pá· *to come out alive* (coll. plu.) < *paʔi·páy *to come out alive*, wa-*ʔi·pá·y/ʔi·pá· *to become enlivened* (coll. plu.) < wa-*ʔi·páy *to become enlivened.*

Following is a complete list of themes conjugated by method (b): *apá·c *to lie down* (coll. plu.) < *apá *to lie down*, *apá·cm *to fall over* (coll. plu.) < *apám (*apa-m) *to fall over*, wa-*ašqʷí·c *to dislike* (coll. plu.) < wa-*ašqʷé *to dislike*, *ʔi·pác *to become men* (coll. plu.) < *ʔi·pá· *to become a man, adult male*, *atúc *to be sated* (coll. plu.) < *ató· *to be sated*, *vatác *to be big* (coll. plu.) < *vatáy *to be big*, *avlʸóc *to be wide* (coll. plu.) < *avlʸéw *to be wide.*

Following is a complete list of themes conjugated by method (c): *u·cpá (*u·-acpá) *to emerge* (coll. plu.) < *acpá *to emerge*, *u·cpák (*u·-acpá-k) *to come out* (coll. plu.) < *acpák *to come out*, *u·cpám (*u·-acpá-m) *to go out* (coll. plu.) < *acpám *to go out*, *u·šmá (*u·-ašmá) *to sleep* (coll. plu.) < *ašmá *to sleep*, *u·vʔá· (*u·-avʔá·) *to walk* (coll. plu.) < *avʔá· *to walk.*

Simple-stem themes of transitive meaning are conjugated for the collective plural by suffixation of a thematic suffix -c: *á·yc (*á·y-c) *to give* (coll. plu.) < *á·y *to give* *akʸéc (*akʸé-c) *to shoot* (coll. plu.) < *akʸé *to shoot*, *alʸúʸc (*alʸúʸ-c) *to cook* (coll. plu.) < *alʸúʸ *to cook.*

The suffix -c occurs with the -í and -ú forms of stems in -í/é and -ú/ó: *aδúc (*aδú-c) *to do, be* (coll. plu.) < *aδú/ó *to do be*, *aštúc (*aštú-c) *to gather* (coll. plu.) < *aštú/ó *to gather*, *aʔíc (*aʔí-c) *to say* (coll. plu.) < *aʔí/é *to say*, *asíc (*así-c) *to drink* (coll. plu.) < *así/é *to drink.*

The suffix -c occurs with the *awé and *ayé forms of the stems *awá·/awé *to go, depart* and *ayá·/*ayé *to go*: *awéc (*awé-c) *to go* (coll. plu.) < *awá·/awé *to go, depart* (but actually used as the coll. plu. of *ayá·/ayé *to go;* see below), *ayéc (*ayé-c in vaδi-*ayéc *to be so big* (coll. plu.), vaδi-***aya·/ayé** *to be so big.*[6]

The suffix -c usually follows other thematic suffixes: *á·pmac (*á·p-m-c) *to throw away* (coll. plu.) < *á·pm *to throw away*, *ašá·kc (*ašá·-k-c) *to see this here from a distance* (coll. plu.) < *ašá·k *to see this from there*, *aδá·yc (*aδá·y-c) *to gather for*

[5] Except those in which position is indicated.

[6] Apparently we are here dealing with an unusual type of sandhi form: vaδi·yá·k *it is so big*, is probably derived from vaδí ayá·k *here it-goes-to*. Similarly vaδi·yéck < vaδí ayéck. The ordinary sandhi forms would retain the accent of vaδí *here* and the quality of the accented vowel í: vaδí·yá·k and vaδí·yéck. Actually, the accent is lost and in vaδi·yéck the vowel i· has the quality of é· [vaδe·yéck], as pre-accentual i· has when preceding accented é. See also **8a, 18.**

someone (coll. plu.) < *aδá·y *to gather for someone*, walʸ-*á·rməc (walʸ-*á·r-ma-c) *to have no desire for* (coll. plu.) < walʸ-*á·rma *to have no desire for*, walʸ-*a?á·məc (walʸ-*a?áv-ma-c) *to pay no attention to* (coll. plu.) < walʸ-*a?á·ma *to pay no attention to*.

In a few cases the suffix -c occurs preceding privative -ma: walʸ-*awícma (walʸ-*awí-c-ma) *to not have done* (coll. plu.) < walʸ-*awéma *to not have done* (< *awí/é *to do*), walʸ-*aδúcma (walʸ-*aδú-c-ma) *to have no part in* (coll. plu.) < walʸ-*aδóma *to have no part in* (< *aδú/ó *to do, be*), walʸ-*ašécma (walʸ-*ašé-c-ma) *to not name* (coll. plu.) < walʸ-*ašéma *to not name* (< *ašé *to name*).

A few themes are conjugated for the collective plural by two methods alternatively. The following examples are illustrative: *anɨ·x/anéxc *to be quiet* (coll. plu.) < *anéx *to be quiet*, *ayá·r/ayérc *to fly* (coll. plu.) < *ayér *to fly*, *mavɨ·s/mavísc *to be soft* (coll. plu.) < *mavís *to be soft*.

In four cases a collective plural theme in -c implies a transitive meaning as compared with the alternative coll. plu. theme formed by another method: *ayá·c (*ayá·-c) *to go after something* (coll. plu.), *awéc[7] *to go* (coll. plu.) < *ayá·/ayé *to go, go after*, *aδɨ·c (*aδɨ·-c) *to come for someone* (coll. plu.), *naδi[8] *to come* (coll. plu.) < *aδɨ *to come*, *ayú·c (*ayú·-c) *to see* (coll. plu.), *ayó·v[9] *to see, to look* (coll. plu.) < *ayú· *to see*, *awá·c (*awá·-c) *to go with, to take* (coll. plu.) < *awá·/awé *to go, depart, go with, take* (see also above).

It may be concluded that with stems whose meanings are potentially either transitive or intransitive, the suffix -c tends to be used when the stem is used with transitive meaning, and an alternative method or modified form of the stem is used when the meaning is intransitive.

[7] See 51e.
[8] See 49.
[9] See 51e.

46. Distributive plurals of simple-stem themes.[10] Simple-stem themes[11] are conjugated for the distributive plural in one of three ways (a) by infixation of <u·> before the consonant immediately preceding the accented vowel of the stem, usually with concurrent ablaut of the accented vowel of the stem, sometimes with concurrent modification of the stem by a consonantal increment -c/-t, and sometimes with a thematic suffix -v/-p.[12] The use of the thematic suffix -v/-p is evidently optional. The use of vocalic ablaut and consonantal increment is compulsory for certain stems. (b) In the case of some stems in which the accented vowel is preceded by a consonant cluster, by infixation of <t> following the initial member of the cluster and <u·> preceding the final member of the cluster, with or without ablaut of the accented vowel, consonantal increment -c/-t, and suffixation of -v/-p. (c) By prefixation of a·- and modification of the stem by a consonantal increment -c, with or without ablaut of the accented vowel of the stem.

The following examples illustrate type (a).

Without vocalic ablaut or consonantal increment: *u·wárv[13] (*<u·>á·r-v) *to desire* (distr. plu.) < *á·r *to desire*, nʸam-*u·évv[13] (nʸam-*<u·>é·v-v) *to occupy selves with* (distr. plu.)[13] < nʸam-*é·v *to occupy oneself with*, *u·lʸáyv (*a<u·>lʸáy-v) *to call people female cross-cousins* (distr. plu.) < *alʸáy *to call someone female cross-cousin*, *vu·súcv (*av<u·>súc-v) *to urinate* (distr. plu.) < *avsúc *to urinate*.

Without vocalic ablaut but with consonantal increment *u·pácv (*a<u·>-pác-v) *to lie down* (distr. plu.) < *apá *to lie down*, *u·pácm (*a<u·>pác-m) *to fall over* (distr. plu.) < *apám *to fall over*,

[10] Reduplicated-stem-themes normally are not conjugated for the distributive plural.
[11] Except those in which position is indicated.
[12] The v form occurs after vowels and most consonants, the p form after m and p.
[13] The shortening of the accented vowel is a phonologic, not a grammatical, change (12d).

xʷa-*cu·pácv (xʷa-*ac<u·>pác-v) *to advance hostilely* (distr. plu.) < xʷa-*acpá *to advance hostilely.*

With vocalic ablaut but without consonantal increment: *u·má·v (*a<u·>má·-v) *to eat* (distr. plu.) < *amá *to eat,* *u·cá·wv (*a<u·>cá·w-v) *to create* (distr. plu.) < *acéw *to create,* *u·xí·r (*a<u·>xí·r) *to tie up* (distr. plu.) < *axér *to tie up,* *u·wí·kv (*a<u·>wí·k-v) *to help* (distr. plu.) < *awík *to help,* *u·sé·v (*a<u·>sé·-v) *to drink* (distr. plu.) < *así/é *to drink,* *u·ʔú·x (*a<u·>ʔú·x) *to cough* (distr. plu.) < *aʔóx *to cough,* *u·pó·yv (*a<u·>pó·y-v) *to die* (distr. plu.) < *apúy *to die,* *ʔu·kú·cv (*ʔa<u·>kú·c-v) *to be old* (distr. plu.) < *ʔakúc *to be old,* *ʔu·qʷásv (*ʔa<u·>qʷás-v) *to be tired* (distr. plu.) < *ʔaqʷá·s *to be tired,* *u·cév (*a<u·>cév) *to treat people* (distr. plu.) < *acé·v *to treat, to doctor,* nʸi·-*u·téšv (nʸi·-*a<u·>téš-v) *to deceive* (distr. plu.) < nʸi·-*atí·š *to deceive,* *u·sá·v (*a<u·>sá·-v) *to eat (meat)* (distr. plu.) < *asó· *to eat (meat),* alʸ-nʸi·-*u·ðúcv (alʸ-nʸi·-*a<u·>ðúc-v) *to think, consider* (distr. plu.) < alʸ-nʸi·-*aðú·c *to think, consider,* *u·pá·v (*a<u·>pá·-v) *to carry on the head* (distr. plu.) < *apáy *to carry on the head.*

The suffix -v/-p follows directional thematic suffixes: *u·šákv (*a<u·>šá-k-v) *to see this from there* (distr. plu.) < *ašá·k *to see this from there,* *u·šámp (*a<u·>šá-m-p) *to see that in the distance* (distr. plu.) < *ašá·m *to see that in the distance.*

With both vocalic ablaut and consonantal increment: *u·šá·cv (*a<u·>šá·c-v) *to distribute (food)* (distr. plu.) < *ašá *to distribute (food),* *u·kʸá·c (*a<u·>kʸá·c) *to shoot* (distr. plu.) < *akʸé *to shoot* (cf. *u·kʸá·m (*a<u·>kʸá·-m) *to shoot at* (distr. plu.) < *akʸém *to shoot at),* *u·pú·cv (*a<u·>pú·c-v) *to put into* (distr. plu.) < *apó *to put into a container,* *u·ðácv (*a<u·>ðác-v) *to gather (greens)* (distr. plu.) < *aðá· *to gather (greens),* wanʸm-*u·yécv (wanʸm-*a<u·>yéc-v) *to like, enjoy* (distr. plu.) < wanʸm-*ayá· *to like, enjoy,* *u·túcv (*a<u·>túc-v) *to be sated* (distr. plu.) < *ató· *to be sated,* wi·-*vu·súcv (wi·-*avu·súc-v) *to be accursed* (distr. plu.) < wi·-*avsú· *to be accursed,* *u·ší·tv (*a<u·>ší·t-v) *to name* (distr. plu.) < *ašé *to name.*

The themes *aðú/ó *to do, be,* *awí/é *to do,* and *aʔí/é *to say* are conjugated for the distributive plural in two alternative ways, with or without consonantal increment -c; the type of vocalic ablaut varies according to the presence or absence of the consonantal increment: *u·ðó·v/u·ðú·cv (*a<u·>ðó·-v/a-<u·>ðú·c-v) *to do, be* (distr. plu.) < *aðú/ó *to do, be,* *u·wé·v/u·wí·cv (*a<u·>wé·-v/a<u·>wí·c-v) *to do* (distr. plu.) < *awí/é *to do,* *u·ʔé·v/u·ʔí·cv (*a<u·>ʔé·-v/a<u·>ʔí·c-v) *to say* (distr. plu.) < *aʔí/é *to say.*

Following is a complete list of themes conjugated by method (b).

Without vocalic ablaut or consonantal increment: wa-*štu·qʷí·v (wa-*aš<t><u·>qʷí·v) *to be noisy* (distr. plu.) < wa-*ašqʷí·v *to be noisy.*

With vocalic ablaut but without consonantal increment: *ʔalʸyu·xá·yv (*ʔalʸ-<t><u·>xá·y-v) *to be timid* (distr. plu.) < *ʔalʸxáy *to be timid,* wa-*štu·qʷé·v (wa-*aš<t><u·>qʷé·-v) *to dislike* (distr. plu.) < wa-*ašqʷé *to dislike,* *satu·ʔí·lʸ (*as<t>-<u·>ʔí·lʸ) *to refuse* (distr. plu.) < *asʔíl *to refuse,* *ʔartu·kó·yv (*ʔar<t><u·>kó·y-v) *to conceal* (distr. plu.) < *ʔarkúy *to conceal.*

With both vocalic ablaut and consonantal increment: *šatu·tú·t (*aš<t><u·>tú·t) *to gather* (distr. plu.) < *aštú/ó *to gather.*

Four themes which take the collective plural in u·- are conjugated for the distributive plural by method (c).

Without vocalic ablaut: *a·šmác (*a·-ašmác) *to sleep* (distr. plu.) < *ašmá *to sleep,* *a·cpác (*a·-acpác) *to emerge* (distr. plu.) < *acpá *to emerge.*

With vocalic ablaut: *a·cpá·ck (*a·-acpá·c-k) *to come out* (distr. plu.) < *acpák

to come out, *a·cpá·cm (*a·-acpá·c-m) *to go out* (distr. plu.) < *acpám *to go out.*

The theme *av?a· *to walk* is conjugated for the distributive plural by method (a): *vu·?ácv (*av<u·>?ác-v) *to walk* (distr. plu.) < *av?á· *to walk.*

47. Collective plurals of prefix-stem and developed themes. Prefix-stem[14] and developed themes are conjugated for the collective plural in one of two ways: (a) The majority of such themes are conjugated for the collective plural by suffixation of -c. (b) A few such themes are conjugated for the collective plural by infixation of <t>/-<c>[15] before the first consonant of the stem plus infixation of <a> before the consonant preceding the accented vowel of the stem, with or without ablaut of the accented vowel, and with optional (?) thematic suffix -v/-p.

The following examples illustrate type (a): *kanʸóc (*k-anʸó-c) *to trail* (coll. plu.) < *kanʸó *to trail;* *cakʸéwc (*c-akʸéw-c) *to bite* (coll. plu.) < *cakʸéw *to bite;* *tará·c (*t-ará·-c) *to light fire* (coll. plu.) <*tará· *to light fire;* *a·súlʸc (*a·-asúlʸ-c) *to rip* (coll. plu.) < *a·súlʸ *to rip.* The suffix -c follows all other thematic suffixes: *té·kc (*t-é·-k-c) *to bring closer* (coll. plu.) < *té·k *to bring closer;* *a·páxməc (*a·-apáx-m-c) *to throw away* (coll. plu.) <*a·páxm *to throw away;* *u·má·yc (*u·-amá·-y-c) *to feed* (coll. plu.) < *u·má·y *to feed;* *maši·δé·vc (*m-aš<i·>δé·-v-c) *to be fierce* (coll. plu.) < *maši·δé·v *to be fierce.*

Following is a complete list of themes conjugated for the collective plural by method (b). Without vocalic ablaut: *natamák (*n-a<t><a>mák) *to leave behind* (coll. plu.) < *namák *to leave behind;* *satamá·v (*s-a<t><a>má·v) *to borrow* (coll. plu.) < *samá·v *to borrow;* *šatamé·v (*š-a<t><a>mé·-v) *to miss* (coll. plu.) < *šamé· *to miss, to be unable to find.* With vocalic ablaut: *vacavá·r (*v-a<c><a>vá·r) *to fail* (coll. plu.) < *vavár *to fail;* *natamí·ł (*n-a<t><a>mí·ł) *to be conceited* (coll. plu.) < *naméł *to be conceited;* *mu·caδú·cv (*m-a<u·><c><a>δú·c-v) *to play practical jokes* (coll. plu.) < *mu·δúcv (*m-a<u·>δúc-v) *to be a practical joker;* *tatapó·yv (*t-a<t><a>pó·y-v) *to kill* (coll. plu.) < *tapúy *to kill;* *a·cavér (*a·-a<c><a>vér) *to finish* (coll. plu.) < *a·ví·r *to finish;* *šatmaδá·v (*š-<t>maδá·-v) *to not know* (coll. plu.) < *šamaδí· *to not know.* Irregular, but to be included within this category, are the following: *maštaδá·v (*m-aš<t><a>δá·-v) *to fear* (coll. plu.) < *mašaδé (*m-ašδé) *to fear;* *maštarác (*m-aš<t><a>rác) *to be angry* (coll. plu.) < *mašaráy (*m-ašráy) *to be angry.*

The reconstruction of the stems of the themes *mašaδé and *mašaráy as *ašδé and *ašráy respectively is somewhat dubious. In the case of the theme *mašaδé, it is to be noted that with the first and second person pronominal prefixes the theme appears as *mašδé. The forms in the three persons and with present-past suffix -k are: 3d pers. mašaδék (zero- + *mašaδé + -k) *he fears;* 2d pers. mamašδék (m- + *mašδé + -k) *you fear;* 1st pers. ?amašδék (?- + *mašδé + -k) *I fear.*

The theme *mašaráy, however, appears in that form only. 3d pers. mašaráyk (zero- + *mašaráy + -k) *he is angry;* 2d pers. mamšaráyk (m- + *mašaráy + -k) *you are angry;* 1st pers. ?amšaráyk (?- + *mašaráy + -k) *I am angry.*

It will be noted that in the collective plurals of these two themes, the infix occurs not preceding but following the first consonant of the stem, and that the infix used is <t> rather than <c>, although the prefix m- regularly takes the infix <c>. If the stems are interpreted as being of the vccv type (*ašδé) and the vccvc type (*ašráy) respectively, the choice of infix <t> rather than <c> and the position in which the infix occurs are explicable by analogy with method (b) for the formation

[14] Except those in which position is indicated.

[15] For the rules governing the choice of infix see note, **48.**

of the distributive plural of simple-stem themes[16] and method (c) for the formation of the distributive plural of prefix-stem themes.[17] At the same time this analogy militates against a possible alternative interpretation of the stems of the themes *mašaδé and *mašaráy as being of the cvcv́ type (*šaδé) and the cvcv́c type (*šaráy) respectively, since if that were the case the infix <c> should have been chosen and the position of occurrence should have been preceding the first consonant of the stem.[18]

48. Distributive plurals of prefix-stem themes.[19] Prefix-stem[20] themes are conjugated for the distributive plural in one of three ways: (a) A few prefix-stem themes are conjugated by infixation of <u·> before the consonant immediately preceding the accented vowel of the stem. (b) The majority of prefix-stem themes are conjugated by infixation of <t>/<c>[21] before the first consonant of the stem plus infixation of <u·> before the consonant immediately preceding the accented vowel of the stem. (c) A few prefix-stem themes with stems containing a consonant cluster immediately preceding the accented vowel are conjugated by infixation of <t>/<c>[22] after the first consonant of the cluster plus infixation of <u·> before the consonant immediately preceding the accented vowel of the stem.

In all three types of conjugation, the accented vowel may or may not be ablauted, the stem may be modified by a final consonantal increment -c/-t, and an optional thematic suffix -v/-p[23] may occur.

Following is a complete list of themes conjugated by method (a). Without vocalic ablaut and without consonant increment: *tamu·nʸé·cv (*t-ma<u·>nʸé·c-v) *to sweeten* (distr. plu.) < *tamanʸé·c *to sweeten* (cf. *manʸé· *to be sweet*); *a·cmu·ʔú·lʸv (*a·c-ma-<u·>ʔú·lʸ-v) *sand is in heaps, dunes all over* < *a·cmaʔú·lʸ *sand is in heaps, dunes.* With vocalic ablaut but without consonantal increment: *taʔu·ní·x (*t-ʔa<u·>-ní·x) *to weigh* (distr. plu.) < *taʔanéx *to weigh;* *u·cu·pí·sv (*u·c-a<u·><u·>pí·s-v) *to suckle* (distr. plu.) < *u·cu·pís (*u·c-a-<u·>pís) *to suckle* (cf. *apís *to suck*); *a·cqu·δáyv (*a·c-aq<u·>δáy-v) *to slip* (distr. plu.) < *a·caqδá·y *to slip;* *a·cmanu·mán (*a·c-mana<u·>mán) *to roll over and over* (distr. plu.) < *a·cmanamá·n *to roll over and over.* Without vocalic ablaut but with consonantal increment: *caku·nʸócv (*c-ka<u·>nʸóc-v) *to follow different trails* (distr. plu.), compare *cakanʸóc (*c-kanʸó-c) *to follow different trails* (coll. plu.), both presumably from an unconjugated theme *cakanʸó, which, however, is not found. With both vocalic ablaut and consonantal increment: *cu·ší·tv (*c-a<u·>ší·t-v) *to challenge* (distr. plu.) < *cašé *to challenge;* *a·camu·nʸéc (*a·c-ma<u·>nʸéc) *to relish* (distr. plu.) < *a·camanʸé· *to relish;* *u·-ckamu·ʔá·c (*u·-cakma<u·>ʔá·c) *to provide with food to take on a journey* (distr. plu.) < *u·ckamaʔáw *to provide with food for a journey,* compare *cakmaʔáw *to take along a lunch.*

The following examples illustrate type (b). Without vocalic ablaut or consonantal increment: *natu·wárv (*n-<t><u·>-á·r-v) *to steal* (distr. plu) < *ná·r *to steal;*

[16] **46b.**

[17] **48c.**

[18] Compare the formation of the distributive plural of prefix-stem themes with stems beginning in a consonant, **48b.**

[19] Developed themes normally are not conjugated for the distributive plural.

[20] Except those in which position is indicated.

[21] The infix <c> is used with themes containing a prefix k-, c-, a·-, u·-, a·c-, u·c-, v-, x-, xʷ-, kʷ-, nʸ-, m-, p-, qʷ-, var-, kʷar-, or sanʸ-. The infix <t> is used with themes containing a prefix t-, š-, n-, s-, or kʷan-. In themes containing two prefixes, the choice of infix is determined by the prefix which stands closest to the stem.

[22] The choice of infix is governed not by the prefix, but by the phonetic character of the first consonant of the stem cluster, i.e., the infix chosen is that which would be appropriate if the first consonant of the stem cluster were a prefix.

[23] The form -v occurs after vowels and most consonants, the form -p, after m and p.

nʸi·-*kacu·wámp (nʸi·-*k-<c><u·>á·m-p) *to defeat* (distr. plu.) < nʸi·-*ká·m *to defeat;* *a·cu·páxm (*a·-a<c><u·>páx-m) *to throw away* (distr. plu.) < *a·páxm *to throw away;* *tatsu·pér (*t-a<t>s<u·>pér) *to tighten* (distr. plu.) < *taspér *to tighten;* *xaclʸu·qícv (*x-a<c>lʸ<u·>qíc-v) *to grab* (distr. plu.) < *xalʸqíc *to grab.* With vocalic ablaut but without consonantal increment: *cacu ná·lʸ (*c-a<c><u·>ná·lʸ) *to lose* (distr. plu.) < *canálʸ *to lose;* *tatmasu·pá·c (*t-<t>mas<u·>pá·c) *to quench fire* (distr. plu.) < *tamaspác *to quench fire,* compare *maspá *fire dies out;* *a·cvu·kʷá·w (*a·-a<c>v<u·>kʷá·w) *to carry long heavy objects in the hand* (distr. plu.) < *a·vkʷéw *to carry a long heavy object in the hand;* *tatʔu·qʷá·sv (*t-<t>ʔa<u·>qʷá·s-v) *to make yellow* (distr. plu.) < *taʔaqʷés *to make yellow;* *cacu·pʼíṭv (*c-a<c><u·>pʼíṭ-v) *to thatch* (distr. plu.) < *capéṭ *to thatch;* *šatku·ví·rv (*š-<t>ka<u·>ví·r-v) *to overpower* (distr. plu.) < *šakavér *to overpower;* *šatu·kʷí·lʸ (*š-a<t><u·>kʷí·lʸ) *to sew* (distr. plu.) < *šakʷílʸ *to sew;* *a·cvaru·kʷí·kv (*a·-<c>var<u·>kʷí·k-v) *to lie on the side* (distr. plu.) < *a·varkʷík *to lie on one's side;* *satu·kʸa·nʸv (*s-a<t><u·>-kʸá·nʸv) *to escape* (distr. plu.) < *sakʸínʸv *to escape, to run away;* maṭ-*a·cxu·vá·kv (maṭ-*a·-<c>xa<u·>vá·k-v) *to be friends* < maṭ-*a·xavík *to have for a friend;* *a·clʸu·ʔé·v (*a·-a<c>lʸ<u·>ʔé·-v) *to think, wish* (distr. plu.) < *a·lʸʔí/é *to think, wish, prefer;* *a·cu·nʸu·rv (*a·-a<c><u·>nʸú·r-v) *to write* (distr. plu.) < *a·nʸór *to write;* *šatku·ʔú·n (*š-<t>ka<u·>ʔú·n) *to prop up* (distr. plu.) < *šakaʔón *to prop up;* *tatu·ðú·lʸ (*t-a<t><u·>ðú·lʸ) *to conceal* (distr. plu.), *to play hand game* < *taðúlʸ *to conceal in the hand;* *kacnʸu·ʔú·cq (*k-a<c>nʸ<u·>-ʔú·cq) *to deform* (distr. plu.) < *kanʸʔúcq *to deform;* *cacxavu·só·y (*c-<c>xava<-u·>só·y) *to blow* (distr. plu.) < *caxavasúy *to blow, breathe on;* *u·tataru·ʔó·yv (*u·-t-<t>ra<u·>ʔó·y-v) *to fix, prepare* (distr. plu.) < *u·taraʔúy *to fix, prepare;* *kacu·náv (*k-a<c><u·>náv-v) *to tell, relate* (distr. plu.) < *kaná·v *to tell;* *cacxu·táṭv (*c-a<c>x<u·>táṭ-v) *to crawl* (distr. plu.) < *caxtá·ṭ *to crawl;* maṭ-*a·cxu·kʷá·v (maṭ-*a·-a<c>x<u·>kʷá·-v) *to be vain* (distr. plu.) < maṭ-*a·xkʷé· *to be vain;* maṭ-*kacu·vév (maṭ-*k-a<c><u·>vév-v) *to consult doctors* (distr. plu.) < maṭ-*kavé·v *to consult a doctor;* *a·cu·qéš (*a·-a<c><u·>qéš) *to make marks* (distr. plu.) < *a·qí·š *to make a mark;* maṭ-*natu·mélp (maṭ-*n-a<t><u·>mél-p)[24] *to exercise powers* (distr. plu.) < maṭ-*namí·l *to exercise one's power, to agitate oneself;* nʸam-*tatu·ðé· (nʸam-*t-a<t><u·>ðé·) *to scan* (distr. plu.) < nʸam-*taðí· *to scan, observe, inspect (place);* ǂxʷacu·nʸóv (*xʷ-a<c><u·>nʸóv) *to dodge* (distr. plu.) < *xʷanʸó·v *to dodge;* *tatu·yúšv (*t-a<t><u·>yúš-v) *to cool* (distr. plu.) < *tayú·š *to cool something;* *tatu·ðón (*t-a<t><u·>ðón) *to dip* (distr. plu.) < *taðú·n *to dip;* *u·cu·tórv (*u·-a<c><u·>tórv) *to play hoop and pole game* (distr. plu.) < *u·tú·rv *to play hoop and pole game;* *nʸacu·vá· (*nʸ-a<c><u·>-vá·)[25] *to inhabit* (distr. plu.) < *nʸaváy *to inhabit;* *vacu·šá· (*v-a<c><u·>šá·)[26] *to guard* (distr. plu.) < *vašáw *to guard;* *u·cacu·vá· (*u·-c-a<c><u·>vá·) *to put in charge;* (distr. plu.) < *u·caváw *to put in charge;* *kacvu·kʸá·v (*k-a<c>v<u·>kʸá·-v) *to meet* (distr. plu.) < *kavkʸéw *to meet, encounter.* Compare also: *u·ckamu·nó·v (*u·-<c>kam<u·>nó·-v) *to support on the shoulders* (distr. plu.) < *u·kavnáw *to support on the shoulders.*

In a few cases, a theme is conjugated alternatively with or without vocalic ablaut, e.g: *kaclʸu·wí·š/kaclʸu·wéš (*k-<c>lʸa<-u·>wí·š/k-a<c>lʸ<u·>wéš) *to coil into bunches* (distr. plu.) < *kalʸawí·š *to coil (grass) into a bunch.*

Without vocalic ablaut but with consonantal increment, in the case of two themes which occur alternatively with

[24] The only case of the irregular use of the form -p of the suffix -v/-p.

[25] Alternatively *nʸacu·vá·yv.

[26] Alternatively *vacu·šá·wv.

vocalic ablaut: *tatu·wécv/tatu·wá·cv (*t-a<t><u·>wéc-v/t-a<t><u·>wá·c-v) *to grind* (distr. plu.) < *tawé *to grind;* *cacu·nʸóc/cacu·nʸú·c (*c-a<c><u·>nʸóc/c-a-<c><u·>nʸú·c) *to imitate* (distr. plu.) < *canʸó *to copy, imitate.*

With both vocalic ablaut and consonantal increment: *u·cu·šá·tv (*u·-a<c><u·>-šá·t-v) *to sting* (distr. plu.) < *u·šá *to sting;* *cacku·ná·cv (*c-<c>ka<u·>ná·c-v) *to decide* (distr. plu.) < *cakaná *to decide;* *tatu·kʷá·cv (*t-a<t><u·>kʷá·c-v) *to awake* (distr. plu.) < *takʷé *to awake;* *cacsu·ví·c (*c-a<c>s<u·>ví·c) *to wipe, rub* (distr. plu.) < *casvé *to wipe, rub;* *cacku·kʷí·cv (*c-<c>ka<u·>kʷí·c-v) *to question* (distr. plu.) < *cakakʷé *to question;* *cacu·mí·c (*c-a<c><u·>mí·c) *to lay down* (distr. plu.) < *camí/é *to lay down long object;* *kacu·tú·cv (*k-a<c><u·>tú·c-v) *to pound* (distr. plu.) < *kató *to pound;* *šatu·mácv (*š-a<t><u·>mác-v) *to dream* (distr. plu.) < *šamá· *to dream;* *tatu·rácv (*t-a<t><u·>rác-v) *to light fires* (distr. plu.) < *tará· *to light fire;* *a·cu·yécv (*a·-a<c><u·>yéc-v) *to lie on their sides* (distr. plu.) < *a·yá·v *to lie on one's side;* *kacu·yécv (*k-a<c><u·>yéc-v) *to sharpen* (distr. plu.) < *kayá· *to grind, sharpen* (edge); alʸ-*a·cu·écv (alʸ-*a·-<c><u·>éc-v) *to follow one another* < alʸ-*a·é·v *to have in addition to, to have besides;* *šatu·mécv (*š-a<t><u·>méc-v) *to miss* (distr. plu.) < *šamé· *to miss;* *a·cxu·kʸícv (*a·-<c>-xa<u·>kʸíc-v) *to cross, pass across* (distr. plu.) < *a·xakʸé·v *to cross, pass across;* *satu·ʔócv (*s-a<t><u·>ʔóc-v) *to give birth* (distr. plu.) < *saʔáwv *to give birth.*

The theme *a·xnó (*a·-axnó) *to become infected* is conjugated for the distributive plural in three ways alternatively: *a·cxu·nó·v/a·cxu·nú·cv/a·cxu·núcv *to become infected* (distr. plu.).

In conjugation for the distributive plural of prefix-stem themes with prefix kʷ-, the prefix kʷ- becomes k-: *kacu·év (*k-<c><u·>é-v) *to give* (distr. plu.) < *kʷí· *to give;* nʸam-*kacu·má·v (nʸam-*k-a<c><u·>-má·-v) *to go into exile* (distr. plu.) < nʸam-*kʷamá·yv *to go into exile;* *kacu·cícv (*k-a<c><u·>cíc-v) *to steal* (distr. plu.) < *kʷacícv *to steal.*

Prefix-stem themes containing a stem beginning in u· are conjugated for the distributive plural in a somewhat irregular way: *šatu·ðá·wv *to wait* (distr. plu.) < *šu·ðáw (*š-u·ðáw) *to wait;* *šatu·pá·wv *to know* (distr. plu.) < *šu·páw (*š-u·páw) *to know;* *nʸacu·wí·c *to own severally* < *nʸu·wíc (*nʸ-u·wíc) *to own;* *a·štu·kʷécv *to slander* (distr. plu.) < *a·šu·kʷé (*a·-š-u·kʷé) *to slander.* Compare also: *cacu·má·kv (*c-a<c><u·><u·>má·k-v?) *to carry behind, on the back* (distr. plu.) < *cu·mákv (*c-a<u·>mák-v) *to corry behind one, on one's back,*[27] compare also *u·camák (*u·-camák) *to put on someone's back.*

Following is a complete list of themes conjugated by method (c). Without vocalic ablaut or consonantal increment: *a·stu·pérv (*a·-as<t><u·>pér-v) *to walk faster* (distr. plu.) < *a·spérv (*a·-aspér-v) *to walk faster;* *u·stu·pérv (*u·-as<t><u·>pér-v) *to exert selves* (distr. plu.) < *u·spérv (*u·-aspér-v) *to exert self;* *a·vacu·rí· (*a·-av<c><u·>rí·) *to make thin-mush cornbread* (distr. plu.) < *a·vrí· (*a·-avrí·) *to make thin-mush cornbread.* With vocalic ablaut but without consonantal increment: *kastu·pú·kv (*k-as<t><u·>pú·k-v) *to curl up* (distr. plu.) < *kaspúk (*k-aspúk) *to curl (self) up;* *kastu·tú·c (*k-as<t><u·>tú·c) *to strike* (distr. plu.) < *kastúc (*k-astúc) *to strike* (with thrown obj.); *a·stu·ʔú·lʸ (*a·-as<t>-<u·>ʔú·lʸ) *to wash* (distr. plu.) < *a·sʔúlʸ (*a·-asʔúlʸ) *to wash;* *šaʔartu·kó·yv (*š-ʔar<t><u·>kó·y-v) *to speak secret or private language* (distr. plu.) < *šaʔarkúy, which, however, does not occur; but compare the distr. obj. theme *šatʔarkó·y (*š-<t>ʔarkó·y) *to tell secrets* < *šaʔarkúy, and the simple-stem theme *ʔarkúy *to conceal, withhold information;* *a·štu·várv (*a·-

[27] An irregular case of a developed theme which is conjugated for the distribuive plural.

aš<t><u·>vár-v) *to sing* (distr. plu.) < *a·švá·r (*a·-ašvá·r) *to sing*.

49. Collective and distributive plurals of themes indicating position. Themes indicating position are of three types: simple-stem themes, prefix-stem themes with prefix v- *to do in standing position*, and prefix-stem themes with prefiix t- or a·- and medio-passive suffix (*to do in sitting position* and *to do in walking or lying position* respectively). All three types are conjugated for the collective plural by prefixation of n- to the stem. Simple-stem themes and some prefix-stem themes are conjugated for the distributive plural by prefixation of a·- or a·k- (the two prefixes being used alternatively in some cases) to the stem, while some prefix-stem themes of this class are conjugated for the distributive plural by one of the regular methods of conjugation.[28]

With simple-stem themes the prefixes n- and a·-/a·k- are simply added to the stem: *aδí· *to come*, coll. plu. *naδí· (*n-aδí·), distr. plu. *a·δí· (*a·-aδí·); *ayém *to go away*, coll. plu. *nayém (*n-ayé-m), distr. plu. *a·yém (*a·-ayé-m); *xi·pán *to be nearby*, coll. plu. *naxi·pán (*n-xi·pán), distr. plu. *a·xi·pán (*a·-xi·pán).

With themes containing prefix v-, the prefixes n- and a·-/a·k- replace the prefix v-: al^{y}-*vanák (al^{y}-*v-anák) *to be ahead of*, coll. plu. al^{y}-*nanák (al^{y}-*n-anák), distr. plu. al^{y}-*a·kanák (al^{y}-*a·k-anák); al^{y}-*vakamé· (al^{y}-*v-kamé·) *to stand on the edge*, coll. plu. al^{y}-*nakamé· (al^{y}-*n-kamé·), distr. plu. al^{y}-*a·ka·mé· (al^{y}-*a·-kamé·); *vé·k (*v-é·-k) *to move closer* (standing), coll. plu. *né·k (*n-é·-k), no distr. plu.; *vé·m (*v-é·-m) *to move away* (standing), coll. plu. *né·m (*n-é·-m), no distr. plu.; *vanál^{y} (*v-anál^{y}) *to stand off from, stand away from*, coll. plu. *nanál^{y} (*n-anál^{y}), no distr. plu.

The theme *vak^{y}á·v *to walk around, stand around* forms three alternative distributive plurals: *vak^{y}á·v (*v-ak^{y}á·v) *to walk around, stand around*, coll. plu. *nak^{y}á·v (*n-ak^{y}á·v), distr. plu. *a·k^{y}á·v/a·kak^{y}á·v/u·kak^{y}á·v (*a·-ak^{y}á·v/a·k-ak^{y}á·v/u·k-ak^{y}á·v) (the third distributive plural form, in prefix u·k-, is unique).[29]

With themes containing prefix t- or a·- and medio-passive suffix, the prefixes n- and a·-/a·k- replace the prefix t- or a·- and the medio-passive suffix is dropped: al^{y}-*tanákv (al^{y}-*t-anák-v) *to get ahead, to lead*, coll. plu. al^{y}-*nanák (al^{y}-*n-anák), no distr. plu.; al^{y}-*takamé·v (al^{y}-*t-kamé·-v) *to sit on the edge*, coll. plu. al^{y}-*nakamé· (al^{y}-*n-kamé·), distr. plu. al^{y}-*a·kamé· (al^{y}-*a·-kamé·); *té·-kv (*t-é·-k-v) *to move closer* (sitting), coll. plu. *né·k (*n-é·-k), no distr. plu.; *té·mp (*t-é·-m-p) *to move away* (sitting), coll. plu. *né·m (*n-é·-m), no distr. plu.; *a·mín^{y}v (*a·-amín^{y}-v) *to pass by, through* coll. plu. *namín^{y} (*n-amín^{y}), distr. plu. *a·mín^{y} (*a·-amín^{y}); al^{y}-*a·x^{w}íl^{y}v (al^{y}-*a·-ax^{w}íl^{y}-v) *to associate with*, coll. plu. al^{y}-*nax^{w}íl^{y} (al^{y}-*n-ax^{w}íl^{y}), distr. plu. al^{y}-*a·kax^{w}íl^{y} (al^{y}-*a·k-ax^{w}íl^{y}); *a·xak^{y}é·v (*a·-xak^{y}é·-v) *to cross, pass across*, coll plu. *naxak^{y}í· (*n-xak^{y}í·), distr. plu. *a·xak^{y}í· (*a·-xak^{y}í·);[30] *a·δómp (*a·-aδó-m-p) *to change course, go off at an angle*, coll. plu. *naδóm (*n-aδó-m), no distr. plu.

Following are examples of themes indicating position which are conjugated for the collective plural by prefixation of n- and for the distributive plural by one of the regular methods of conjugation for the distributive plural of prefix-stem themes: *vaδúk (*v-aδú-k) *to stand facing towards here*, coll. plu. *naδúk (*n-aδú-k) distr. plu. *vacu·δú·kv (*v-a<c><u·>δú·-k-v);[31] *taδúkv (*t-aδú-k-v) *to sit facing towards here*, coll. plu. *naδúk (*n-aδú-k), distr. plu. *tatu·δú·kv (*t-a<t><u·>δú·-k-v);[32] *vaδóm (*v-aδó-m) *to stand facing towards*

[28] 48.

[29] The same collective and distributive plurals are used for the simple-stem theme *kak^{y}á·v *to walk around, stand around*, which is evidently a derivative with k- initial consonantal increment from a stem *ak^{y}á·v. See **39e.**

[30] **35d.**

[31] The suffix –v in this case is the –v form of the suffix –v/–p used in conjugation for the distributive plural.

[32] The suffix -v/-p in this case is evidently the medio-passive suffix.

there, coll. plu. *naδóm (*n-aδó-m), distr. plu. *vacu·δú·m (*v-a<c><u·>δú·-m); *taδómp (*t-aδó-m-p) *to sit facing towards there*, coll. plu. *naδóm (*n-aδó-m), distr. plu. *tatu·δú·mp (*t-a<t><u·>δú·-m-p);[33] *šaδómp (*š-aδó-m-p)[34] *to go in that direction, head towards there*, coll. plu. *naδóm (*n-aδó-m), distr. plu. *šatu·δú·mp (*š-a<t><u·>δú·-m-p);[33] *tapéṭv (*t-apéṭ-v) *to block, to sit in the way, in front of*, coll. plu. *napéṭ (*n-apéṭ), distr. plu. *tatu·pí·ṭv (*t-a<t><u·>pí·ṭ-v).[33]

Inasmuch as the formation of collective plurals in n- and distributive plurals in a·-/a·k- from themes with t- or a·- prefix and medio-passive suffix involves the dropping of the medio-passive suffix, while the formation of collective plurals in n- and distributive plurals in a·-/a·k- themes with prefix v- involves only the substitution of n- or a·-/a·k- for the prefix v-, it may be supposed that this type of conjugation is especially characteristic of themes with prefix v- *to do in standing position*. Collective plurals in n- and distributive plurals in a·-/a·k- of themes with t- or a·- prefix and medio-passive suffix may be interpreted as transfers from a corresponding theme with prefix v-, which, however, is not always actually found.[35]

Similarly, collective plurals in n- and distributive plurals in a·-/a·k- of simple-stem themes may be interpreted as transfers from themes consisting of prefix v- plus the stem, which are not necessarily actually found. The conjugation of the simple-stem themes *acén *to descend* and nʸi·-*amán *to start from* throws some light on the question.

[33] The suffix -v/-p in these cases is evidently the medio-passive suffix.

[34] This is a unique case of a theme indicating position containing a prefix š- and medio-passive suffix.

[35] Similar transfers occur also in other contexts, though infrequently. Thus, the distributive plural of *u·qár (*u·-aqár) *to chip a piece off* is *kacu·qá·rv (*k-a<c><u·>qá·r-v)<*kaqár (*k-aqár), which is not found as an unconjugated theme.

The plurals of *acén *to descend* were given as coll. plu. *nacén (*n-acén) and distr. plu. *a·cén (*a·-acén). A coll. plu. theme *acá·n may, however, be extracted from the tribal name kʷacá·n *Yuma;* the form may be analyzed as kʷ- definite + *acá·n *to descend* (coll. plu.) and translated as *those who descend (in a group)*. Since a tribal name is likely to preserve an archaic form, it may be supposed that the theme *acén was formerly conjugated by one of the regular methods for conjugation of simple-stem themes (see **45a**), and that the forms *nacén and *a·cén were derived from a no longer existent unconjugated theme *vacén (*v-acén) *to descend in standing position*.

Two alternative conjugations of the theme nʸi·-*amán *to start from* were given: 1. Coll. plu. nʸi·-*amá·n, distr. plu. nʸi·-*u·má·nv (cf. *amán *to arise*, coll. plu. *amá·n, distr. plu. *u·má·nv); 2. Coll. plu. nʸi·-*namán, distr. plu. nʸi·-*a·mán.

When an unconjugated theme nʸi·-*vamán was suggested by the investigator as an equivalent for nʸi·-*amán, the informant pronounced it an acceptable and actual form but stated that it was very rarely used.

It may also be noted that all the simple-stem themes conjugated by prefixation of n- and a·-/a·k- are interpretable as implying standing position.

50. Collective and distributive plurals of reduced themes. Reduced themes are usually conjugated for the collective and distributive plurals by conjugation of the auxiliary verb rather than the reduced theme itself: mák aʔí·m *he comes away*, máka? íck *they two come away*, mák u·ʔé·vək *they many come away;* lá·x aʔí·m *it flashes*, lá·x aʔíck *they two flash*, lá·x u·ʔé·vək *they many flash;* manamán aʔí·m *it goes up and down*, manamán aʔíck *they two go up and down*, manamán u·ʔí·cək *they many go up and down*.

Reduced forms of themes indicating position are conjugated for the collective and

distributive plural, the auxiliary verb remaining in the singular form: vaδé· aʔí·m *he steps aside*, naδé· aʔí·m *they two step aside;* a·δómp aʔí·m *he (walking) turns at an angle*, naδóm aʔí·m *they two turn off at an angle;* vaná·lʸ aʔí·m *he (standing) moves away*, naná·lʸ aʔí·m *they two move away*, a·ná·lʸaʔí·m *they many move away.*

51. Atypical and irregular conjugation. Several different types of atypical or irregular conjugation for the collective and distributive plural are found:

51a. Several simple-stem themes have as their collective plural form a theme which is formally their distributive plural, and as their distributive plural form a theme which is formally derived as if from a prefix-stem theme consisting of a prefix a·- plus the stem. Following is a complete list of such themes: *atáp *to know, put down*, coll. plu. *u·tá·p (*a<u·>tá·p-p), distr. plu. *a·cu·tá·p (*a·-a<c><u·>tá·p-p as if < *a·-atáp); *atápm *to throw away*, coll. plu. *u·tá·pm, distr. plu. *a·cu·tá·pm (as if < *a·-atáp-m); *atáqš *to jump*, coll. plu. *u·tá·qš (*a<u·>tá·qš), distr. plu. *a·cu·tá·qš (*a·-a<c><u·>tá·qš as if < *a·-atáqš); *acérq *to defecate*, coll. plu. *u·cí·rq (*a<u·>cí·rq), distr. plu. *a·cu·cí·rq[36] (*a·-a<c><u·>cí·rq as if < *a·-acérq); *akú·lʸ *to climb*, coll. plu. *u·kú·lʸ (*a<u·>kú·lʸ),[37] distr. plu. *a·cu·kúlʸ (*a·-a<c><u·>kúlʸ as if < *a·-akú·lʸ).

To be compared with the foregoing are the following simple-stem themes which are conjugated regularly for the collective plural but whose distributive plural forms are derived as if from a prefix-stem theme consisting of a prefix a·- plus the stem: *á·p *to throw, lay down*, coll. plu. *á·pc, distr. plu. *a·cu·wá·p (as if < *a·-á·p or *a·-awáp); *á·pm *to throw away*, coll. plu. *á·pməc, distr. plu. *a·cu·wá·pm (as if < *a·-á·pm or *a·-awápm); *anʸúv *to fight*, coll. plu. *anʸú·v, distr. plu. *a·cu·nʸú·v (*a·-a<c><u·>nʸú·v as if < *a·-anʸúv); x^{w}e-*aδú·cv *to dodge*, coll. plu. x^{w}e-*aδú·cvəc, distr. plu. x^{w}e-*a·cu·δúcv (x^{w}e-*a·-a<c><u·>δúc-v as if < x^{w}e-*a·-aδú·c-v); *apíc *to slap (mud) on*, no coll. plu., distr. plu. *a·cu·pí·c/a·cu·pícv (*a·-a<c><u·>pí·c/a·-a<c><u·>píc-v as if < *a·-apíc).[38]

51b. A certain number of prefix-stem themes of intransitive meaning have as their collective plural forms themes which are formally their distributive object forms. They are normally not conjugated for the distributive plural. Following is a complete list of such themes: *sakʸév *to be half full*, coll. plu. *satkʸá·v (*s-a<t>kʸá·v); *k^{w}anamí· (< *k^{w}anamí·y) *to be brave*, coll. plu. k^{w}anatmé·y (*k^{w}an-a<t>mé·y); *k^{w}araʔák *to be an old man*, coll. plu. *k^{w}-arac?á·k (*k^{w}ar-a<c>ʔá·k); *sanʸaʔák *to be an adult woman*, coll. plu. *sanʸacʔá·k (*sanʸ-a<c>ʔá·k); ya-*saʔán *to be sterile, impotent*, coll. plu. ya-*s-a<t>ʔá·n (ya-*s-a<t>ʔá·n); *talaxóx *to be empty*, coll. plu. *tatlaxú·x (*t-<t>laxú·x); *calaʔáwš *to be emaciated*, coll. plu. *caclaʔá·wš (*c-<c>laʔá·wš); *tamaʔór *to be full*, coll. plu. *tatmaʔú·r (*t-<t>maʔú·r); *ta·rawí· *to recover*, coll. plu. *ta·tarawé· (*t-a·<t>rawé·); *taq^{w}alayéw *to do all night*, coll. plu. *taq^{w}-aclayá·w (*t-q^{w}-<c>layá·w).

The theme *xamí· *to be born* is conjugated in this way for the collective plural and is also conjugated regularly for the distributive plural: *xamí· (< *xamí·y) *to be born*, coll. plu. *xacmé·y (*x-a<c>mé·y), distr. plu. *xacu·mé·v (*x-a<c><u·>mé·-v).

51c. Some themes (evidently all of the simple-stem type) have as their collective plural forms an entirely unrelated theme, usually formally an unconjugated theme. With some of these, the distributive plural form appears to be conjugated from the

[36] This form is said, however, to be a recent invention used more by young people than by old.

[37] Also possibly analyzable as *u·-akú·lʸ (45c).

[38] A regular distributive plural theme *u·pí·cv occurs as an alternative. The theme *apíc is also conjugated irregularly for distributive object: *a·cpíc (*a·-a<c>píc as if <*a·-apíc) *to slap (mud) on here and there.*

unconjugated theme of collective plural meaning: *avéš *to run*, coll. plu. *cavakʸév, distr. plu. *cavu·kʸá·v; *acá·v *to finish meal*, coll. plu. *kacðá·v (poss. distr. obj. form of *k-aðá·v?), distr. plu. *kacu·ðáv. Compare also: *xalʸkʷá· *to hunt, search for*, coll. plu. *taxalʸkʷécv, distr. plu. *taxlʸu·kʷá·cv. With others, the distributive plural form is lacking or is a second unrelated and formally unconjugated theme: *avá *to sit, dwell, be situated*, coll. plu. *aðáw, no distr. plu.; *avá· *to arrive here*, coll. plu. *katán, distr. plu. *apák (*apá-k); *avá·m *to arrive there*, coll. plu. *katánm, distr. plu. *apám (*apá-m); *aðík *to lie, be lying, be situated in lying position*, coll. plu. *aðáw, distr. plu. *atí·v; *ʔanóq *to be small*, coll. plu. *ʔanaqór (poss. *to be in small pieces*), no distr. plu.; *amí/é *to weep, to cry (bird) calls*, coll. plu. *macacʔí/é (prob. distr. obj. form *m-c-a<c>ʔí/é < *m-c-aʔí/é.[39]

51d. As previously noted, a number of distributive object themes are conjugated for the collective plural.[40] This is always done by suffixation of a thematic suffix -c. The following examples illustrate this type of conjugation: *acʔí·r (< *aʔér *to be startled*) *to be easily scared*, coll. plu. *acʔí·rc; *acsá· (< *asó· *to eat (meat)*) *to habitually eat meat, to be a meat-eater*, coll. plu. *acsá·c; *acsí·c (< *así/é *to drink*) *to habitually drink, to be a drinker*, coll. plu. *acsí·cc; *kacqá·r (< *kaqár *to chip a piece off*) *to chip pieces off*, coll. plu. *kacqá·rc; *šatrí·q (< *šaréq *to hold, grasp*) *to hold with both hands*, coll. plu. šatrí·qc; *tatsúlʸ (< *tasúlʸ *to gouge*) *to gouge in sev. places*, coll. plu. *tatsúlʸc. A unique type of treatment occurs in the case of the following: *vackʸé· (*v-a<c>kʸé· < *vakʸé· *to take an unsteady step forward, to one side*) *to advance stopping momentarily*, coll. plu. *natkʸé· (*n-a<t>kʸé·).[41]

[39] 38b.

[40] 43a.

[41] The treatment here is evidently that of themes indicating position (49).

51e. The following themes are conjugated in a partly or wholly irregular way: *á·m *to pass by*, coll. plu. *ná·m (*n-á·m as if < a theme indicating position), distr. plu. *natu·wámp (*n-<t><u·>á·m-p as if < *n-á·m); *ayú· *to see*, coll. plu. *ayó·v,[42] distr. plu. *u·yó·v; *ayúm *to be able to see*, coll. plu. *ayó·m (*ayó·v-m), distr. plu. *u·yó·m (*u·yó·v-m); *avʔáw *to stand*, coll. plu. *u·vʔó·, distr. plu. *u·vʔóc; *ayá· *to go*, coll. plu. *awéc (< *awá·/awé *to go, depart*), distr. plu. *a·yá· (*a-ayá· as if < a theme indicating position); *awém *to go away with, take away*, coll. plu. *awémc (*awé-m-c, regular), distr. plu. *cawém; *axáv *to enter*, coll. plu. *u·pú·, distr. plu. *a·kxáv (*a-akxáv as if < *akxáv, a theme indicating position); *axápa (*axáv-pa) *to go to the end*, coll. plu. *axá·pa (*axá·v-pa), distr. plu. *a·kxápa (*a-akxáv-pa); *xalakúy *to rejoice*, coll. plu. *xaltakó·yv, no distr. plu.; *ʔalá·y *to be bad*, coll. plu. *ʔacláyc, no distr. plu.; *kʷasʔi·ðí· *to be a doctor*, coll. plu. *kʷasʔi·tðíc, no distr. plu.; *ʔa·kó·y *to be an old woman*, coll. plu. *ʔa·ckóyc, no distr. plu.; *mašaxáy *to be a maiden*, coll. plu. *mašatxá·, no distr. plu. (cf. *maxáy *to be a youth*, coll. plu. *maxá·, no distr. plu.); *cu·tm *to push away, shove away*, coll. plu. *cú·tməc (*cú·t-m-c, regular), distr. plu. *u·cútm (*a<u>cút-m as if < *acú·t?); *manʸúv (*m-anʸúv) *to fight for, over, about*, coll. plu. *manʸú·y (as if < a simple-stem theme), distr. plu. *macu·nʸú·v (*m-a<c><u·>nʸú·v, regular); *xalʸúy (*x-alʸúy?) *to be odorous, fragrant*, coll. plu. *xalʸó·y (as if < a simple-stem theme), distr. plu. *xacu·lʸó·yv (*x-a<c><u·>lʸó·y-v, regular?); *u·xakʸí· *to take (long obj.) across* and *taxakʸí· *to take (large round obj.) across*, coll. plu. (of both) *caxakʸí·, distr. plu. (of both) *caxakʸé·v; *taxmá·lʸ (*t-xamá·lʸ) *to whiten*, coll. plu. *taxmá·lʸc (regular), distr. plu. *tatxamu·wálʸ (*t-<t>xam<u·>á·lʸ).

[42] Alternatively *ayú·c.

TSOTSIL PHONEMES WITH SPECIAL REFERENCE TO ALLOPHONES OF B

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0. Purpose
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0. The Tsotsil language is a member of the Mayan family and is spoken by a minimum of 34,000 Indians living in the state of Chiapas, Mexico.[1]

One of the most interesting features of Tsotsil phonemics is the phoneme b which has the submembers [b], [ʔb], [ʔm], and [ʔM]. The problem involved in its analysis will be presented against the background of the Tsotsil phonemic structure as a whole.

1. Tsotsil has twenty-six phonemes, including twenty-one consonants: b, p, t, k, c, č, ʔ, p′, t′, k′, c′, č′, m, n, s, š, h, v, y, l, r; and five vowels: i, e, a, o, u.

2.1. b [b], [ʔb], [ʔm], and [ʔM]. Voiced bilabial stop with glottal influence.[2] This is a complex phoneme whose distribution and phonetic variants are as follows.

Utterance initial: [ʔb] (voiced bilabial stop preceded by a weak glottal stop) bot [ʔbot] *hail.*

Utterance medial. Preceded and followed by vowels: [ʔ.b] (voiced bilabial stop preceded by a glottal stop; with syllable division between, as indicated by a lowered dot) čibuk [čiʔ.buk] *just two;* ta balamil [taʔba.la.mil] *in the world.* Preceded by a stop: [.b] (voiced bilabial stop without glottal influence) makbil [mak.bil] *covered;* ʔamak be [ʔa.mak be] *you covered the road.* Preceded by other consonants: [.ʔb] (voiced bilabial stop with glottal influence) pasbil [pas.ʔbil] *made;* ʔapas be [ʔa.pas ʔbe] *you made a road.* Followed by a consonant: [ʔm] (voiced bilabial nasal preceded by weak glottal stop, plus nasalization and glottalization of the preceding vowel) čobtik [čǫʔm.tik] *cornfield;* ʔilub ta ʔora [ʔi.lų̃ʔm ta ʔo.ra] *he tired immediately.*

Utterance final.[3] [ʔM] (voiceless bilabial nasal preceded by a weak glottal stop, plus nasalization and glottalization of the preceding vowel) čib [čį̃ ʔM] *two.*

The morphological evidence tends to give strong support to the conclusions arrived at by the phonological procedures of observing the mutually exclusive positions of the submembers of this phoneme. Additional evidence is especially welcome at this point because of the marked phonetic difference between the submembers of the phoneme. In languages in general one rarely finds as submembers of one phoneme items as sharply diverse as [b] and [ʔm]. Nevertheless the phonological pressure of the mutually exclusive phonetic environments in which they occur leaves no other alternative.

The morphological evidence supporting this conclusion is as follows: morphemes

[1] The material in this article was collected in the village of Nabenchauc where the Zinacanteco dialect, which varies slightly from other dialects in the tribe, is spoken. María Pérez has been the informant used during the investigator's four years of residence in the village.

[2] It is interesting to note that in certain related dialects (for example, the Cakchiquel of Guatemala), the parallel phoneme is an implosive bilabial stop.

[3] Note that utterance final position is phonologically marked by: voiced stop b> [ʔM]; voiceless stops > heavy aspiration; h > pronounced velar friction; voiced consonants (except nasals and r) > voiceless offglide.

which contain the phoneme b have the phonetic actualization of that phoneme modified in accordance with the distributional rules given above whenever morphological processes modify the environment of that phoneme. That is to say, that the phonemic unit remains the same in any given morpheme even though the phonetic form of the phoneme is varied.

Note, for example, the morpheme ceb *girl:* (1) In isolation or at the end of utterances the morpheme would be phonetically [cę?M]; (2) Within a phrase, when followed by a consonant of another word, the phonetic form would be [cę?m], as in [mi cę?m to] *is she still young?*; (3) Followed by a suffix beginning with a vowel, as for example -etik *plural*, the morpheme would be [ce?.b-], as in [ce?.be.tik] *girls;* (4) Followed by a suffix beginning with a consonant the morpheme would be phonetically [cę?m.-], as in [?a.cę?m.tak] *your girls.* Written phonemically, the illustrations just given would appear as follows: ceb *girl,* mi ceb to *is she still young?*, cebetik *girls,* ?acebtak *your girls.*

If the phonemic interpretation given here were rejected, and [?b], [?m], and [?M] were considered sequences of phonemes, then the investigator describing the morphology would have to have a statement showing the universal substitution of these sequences for b under strictly defined phonological conditions on a level of analysis of the grammatical structure of the language. However, this would entail a type of morphological process which has no parallel elsewhere in the language.

We conclude therefore that it is preferable to consider [b], [?b], [?m], and [?M] as submembers of a single phoneme written simply b.

In other positions the glottal stop as a separate phoneme is somewhat similar to the glottal stop[4] which is part of the phoneme b.

[4] Initially in utterances the phonetic glottal stop which occurs with and as a part of b is rather weak or lenis and in phonetic contrast to the rather fortis nature of that which occurs as a regular initial phoneme ?.

At first this occurrence of [?] in both the phonemes ? and b would appear to invalidate the phonemic analysis presented since it might seem to imply that actual intersection of phonemes were present. Consider, however, a partially parallel situation in English. The phoneme h occurs at the beginning of the word *heel.* In the word *peel* the stop [p] is followed by a phonetic [h] which is quite similar to the [h] of *heel.* Nevertheless we consider the phonetic combination [p^h][5] as a single phoneme (1) because it is phonologically in complementary distribution to unaspirated [p] and (2) because [p] does not occur without an aspiration in many phonological positions such as the beginning of a heavy stressed syllable. Furthermore, (3) the complex [p^h] functions as a single unit in determining the syllable structure and the sequences which make up syllables so that [p^h] acts as a single consonant in the structural setup of the language. We conclude then that the English aspirated p is a single phoneme which is phonetically complex, rather than being comprised of a sequence of phonemes which includes [p] and a variety of [h] that is slightly modified due to the fact that it occurs in such a sequence.

Consider now the parallel with Tsotsil. (1) [?b], [?m], and [?M], are all in complementary distribution with b and with each other. (2) In certain phonological environments [b] does not occur unless the glottal stop accompanies it. (3) [?b] acts as a single unit in the syllable structure as portrayed in section 3 of this paper. In Tsotsil we conclude, therefore, that the [?b] is a phonetically-complex submember of the phoneme b, rather than being comprised of a sequence of phonemes which

[5] We have raised the h, rather than writing it on the line, in order to avoid the complications which come into the discussion if we include such words as *loophole* in which one may find the sequence [-p^h.h-].

includes [ʔ] and [b]. If it is legitimate to conclude that the aspirated p of English is a single phoneme without intersection of the phoneme h, it is equally legitimate to conclude that [ʔb] of Tsotsil is a phonetically-complex single unit constituting a submember of the phoneme b.

When a glottal stop phoneme ends a word and this word precedes a word beginning with the phoneme b in its phonetic form [ʔb], the weak glottal stop of the second word disappears and the strong glottal stop of the first word remains. In this case a problem is created in that [-V ʔ.bV] is phonetically quite similar to [-Vʔ. bV]. Instrumental studies are needed to determine the degree of similarity. The analysis of the [ʔb] as one phoneme, however, on the analogy of English [pʰ], would remain the same.

p, t, k[6] voiceless aspirated bilabial, alveolar, and velar stops; as in pop *straw mat*, tok *cloud*. These become more strongly aspirated in utterance final position.

c ,č voiceless aspirated alveolar and alveopalatal affricates; as in cekil *skirt*, čuč *squirrel*.

ʔ glottal stop; as in voʔ *water*, ʔavuʔun *yours* (compare vo *house fly*, ʔavun *your paper*).

p', t', k', c', č' voiceless glottalized bilabial, alveolar, and velar stops, and voiceless glottalized alveolar, and alveopalatal affricates; as in p'in *pot*, t'ul *rabbit*, k'ok' *fire*, c'iʔ *dog*, č'iš *thorn*, (compare pil *Philip*, tul *short stick*, kok *my foot*, cib *fern*, čiš-teʔ *cherry*).

m, n voiced bilabial and alveolar nasals, as in meʔ *mother* and in ničim *flower*.

s, š, h voiceless alveolar, alveopalatal, and glottal spirants as in sat *his face*, šan *palm*, hol *my head*. The h has heavy velar friction in utterance final position, as in vah *tortilla*.

v, y [v,v^{V}; y, y^{Y}] voiced bilabial and alveopalatal spirants, as in voʔ *water*, and yan *more*. The v is freely variable to w or to labiodental v with some speakers. Both v and y have voiceless offglides in utterance final position, as in taiv *frost*, čoy *fish*.

l [l, l^{L}] voiced alveolar lateral with voiceless offglide in utterance final position, as in kil *my debt*.

r voiced alveolar flap, rare in words of native origin, as in krem *boy*, but more frequent in borrowed words,[7] as in rominko *Sunday*.

2.2. i high front close unrounded, as in p'in *pan;* e mid front open unrounded, as in tem [tɛm] *bed*, a low central open, as in sat *his face;* o mid back open rounded, as in k'on *yellow;* u high back close rounded, as in mut *bird*. These vowels all become glottalized and nasalized when they occur in a closed syllable with the phoneme b as the final consonant, as in ʔabtel [ʔą̈ʔm.tel] *work*.

2.3. Stress is lexically nonphonemic occurring on utterance final syllables: mi ʔaman ʔak'ál *did you buy charcoal?* However, sentence stress ['] occasionally indicates the center of emotional attention in short exclamations and possibly elsewhere, as in ʔák'al van *charcoal!*

3. Note the following types. Syllables beginning with a vowel are limited in occurrence to medial and final position in words:[8]

[6] k and k' vary nonphonemically to a position farther front or back in the mouth when they occur next to front or back vowels respectively, as in kič *my chile*, kuʔun *mine*, ʔik' *wind*, hnuk' *my throat*.

[7] Spanish loans introduce no new phonemes into the language.

[8] Words like ʔon *avocado* begin with a phonetic glottal stop. This stop remains in compounds such as yaš-ʔon *a variety of avocado*, or following the morpheme č, as in čʔalah *she gives birth*. However, when the morphemes y *his*, and k *my*, are prefixed to words beginning with ʔ, the ʔ is lost, as in ʔokoc *lizard*, yokoc *his lizard*, and ʔon *avocado*, kon *my avocado*.

V na.e.tik *houses*, ta.o *find it*.

VC sč'o.al.tak *its rats*, sč'o.al *its rat*.

CVCC syllable type occurs with only one word ʔanc *woman*,[9] and retains this syllable form only at the end of utterances or before syllables beginning with a consonant. The following syllable types may occur initially, medially, and finally in words:

CV na *house*, hma.la.tik *let's wait*, ma.no *buy it*.

CVC tot *father*, sa.kub.ta.so *whiten it*, ča.nib *four*.

In words of native origin certain syllable types occur only initially in words:

CCV sna *his house*, ččam *he dies*.[10]

CCCV hkrem *my boy* (only known example that is not a loan word).

Loan words with stop plus r may form the following syllables:

CCCVC initially as in hkrus *my cross*.

CCV medially as in lim.pro.niš *quince*.

CCVC finally as in man.treš *tablecloth*.

4.1. Within the pattern of syllables CVC, CV, and VC described above any consonant may occur as the presyllabic or postsyllabic; except that r occurs only presyllabic. For illustrations of these various types note items quoted elsewhere in the paper.

As the first of two consonants in a presyllabic consonant cluster, the consonants h, s, š, č[11], c may occur, as illustrated in cman *he buys it*, hna *my house*, sna *his house*, šmeʔmon *it is meowing*, čmuy *he ascends*.

As the third of three consonants in a presyllabic consonant cluster, the consonant is limited to r, as in hkrem *my boy*.

The second of two consonants in a postsyllabic consonant cluster is limited to c, as in ʔanc *woman*.

Between syllables it would appear that any combination of consonants may occur, of permitted syllable final plus permitted syllable initial, and they do not seem to form any pertinent pattern. However, numerous combinations have not yet been found.

Two glottalized consonants occurring in the same syllable must be identical as in k'ok' *fire*, t'ut' *stingy*, p'up' *powder*. There may be two diverse glottalized consonants in a word provided they occur in two different syllables, as in č'u.pak' *soap-root*.

4.2. Any of the vowel phonemes may occur as the syllabic within any of the syllable patterns described above. For illustrations note items quoted elsewhere in the paper. All clusters of two vowels are ambisyllabic. (No clusters of three vowels have been found.)

All of the theoretically possible combinations of two vowels occur, including combinations of identical vowels.

i.i, i.e, i.a, i.o, i.u; bi.il *name*, bi.e.so *rub it*, syi.al *its young ear of corn*, č'i.om-kaʔ *young horse*, č'i.uk *that it might grow*.

e.i, e.e, e.a, e.o, e.u; ʔi.be.in *he went in the road*, be.e.tik *roads*, ʔe.al *mouth disease*, be.oʔ *waterway*, ce.u.bem *gotten green*.

a.i, a.e, a.a, a.o, a.u; ta.iv *frost*, k'a.ep *garbage*, ča.kol.ta.at *you are freed*, ta.o *find it*, č'a.u.bem *gotten bitter*.

o.i, o.e, o.a, o.o, o.u; yo.ik *you (pl.) chase it*, vo.e.tik *flies*, sč'o.al *its rat*, yo.o *chase it*, vo.uk *that it might be a fly*.

u.i, u.e, u.a, u.o, u.u; stu.il *its bad odor*, st'i.ru.el *its thumping*, su.al *its squash blossom*, t'i.lu.o *thump him*, cu.uk *that it might be a gourd*.

[9] There is only one word known in the language with a final consonant cluster, ʔanc *woman*.

[10] The cluster čč has open transition analogous to that of clusters of stops within words or between words, as in ččam *he dies*, k'elo ʔamoč čp'aj *look at your basket, it's falling*, hmaktik *let's close it*, ʔamak to *you still closed it*.

[11] All of these items are morphologically complex. s *his* plus na *house* > sna *his house*.

THREE TEWA TEXTS

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0. Introduction
1. Buffalo Hunt Episode
2. God and Montezuma Hold a Shooting Contest
3. The Girl and the Crow

0. The following Tewa texts are by Eduardo Cata, an educated San Juan Tewa Indian, who is a talented musician as well as a native speaker of the San Juan dialect of the Tewa language, and much interested in the pitch of Tewa syllables. The Tewa dialect of the pueblo of San Juan is the most northerly dialect of northern Tewa and is historically the most important Tewa dialect. The stories are told in the same styles in which Cata heard them. The first was told to Eduardo Cata by Juan Cata, paternal grandfather of Eduardo Cata; the second was told to Eduardo Cata by an old man; the third by an old woman.

1. Buffalo Hunt Episode

we·ˈmųˊ nąˑˋ ʾeˈˈnųˊ ᵐbaˋ ʾoˑ-mųˈˈ iˈheˑˈriˋ nąˑˋaˊ heˈraˊ ᵐbaˊyeˊkiˊ sęˋnnæˋn thąˑˋmpiˈˈyeˋ ʾaˋkǫ̨ŋheˋnʸįˋmpiˈˈyeˋ ᵑgiˑˋkǫ̨ˈˈŋwoˊmæˑˋ. [*One-time I a-youth indeed I-was when, I and many men east to-the-great-plains we-buffalo-hunting-went.*] wiˋyaˑˈriˈˈ ᵐbaˋ riˑˋkˈwoˑ ʾiˈheˑˈriˋ wiˋyeˈˈ kˈeˊpˈiˊ ʾeˑˈ-caˑˋ. [*One week indeed they-were-out when, two Whitemen they-dual-them-found.*] ʾįˋŋ-kˈeˊpˈiˊ raˑˋ-miˑˈnaˋˈtųˋŋwæˋyiˈˈiˑˋ. [*The-Whitemen dual-they-were-going-around-prospecting.*] nąˑˋ-ŋgeˈriˋ raˑˋ-yiˈˈiˑˋ. [*On-foot dual-they-were-going-around.*] wiˈræˊŋ-hæˑˈpąˋŋmaˑˈpiˊ. [*Dual-they-had-no-horses.*] ʾįˋŋ-kˈeˊpˈiˊ ræˊŋ-ˈfeˈfaˋheˈraˊ taˋlaˈtciˈˈyaˊ ʾiˈmąˊ. [*The-Whiteman dual-they spade and pick were-carrying-on-their-backs.*] nąˈˈįˋŋ ʾeˑˈ-pąˋnʸąˈˈąˊ næˊˈiˈˈŋ kˈeˊpˈiˊ. [*We captured these Whitemen.*] "haˑˈˈwæᵐboˈˈ raˑˋ-mųˑˋ", hąˊŋ wiˊ saˈveˈˈ nąˑˋtųˊ. ["*Mean dual-they-are,*" *thus an Apache said.*] nąˑˋ-tųˑ ʾiˈheˑˈriˋ tˈæˋkiˊ ʾeˈˈnųˊŋ riˑˋ-tˈeˑˈyaˋpoˑˋ. [*He said when, all the-youths got-angry.*] ʾiˑˋ-tųˋyǫ̨ˈŋ ʾįˋn-sęˑˋ-nnæˋndaˈriˊ riˑˋ-tˈeˑˈyaˋyaˋpoˑˈriˊ ʾiˑˋ-mųˈˈųˑ ʾiˈheˑˈriˋ "tiˑˋ hæˊˈįˋŋ kˈeˊpˈiˊ ʾiˊ-heˑᵐdaˈˈaˋ?" [*The-chief, the-men that-they-were-getting-angry he-saw when, "interrogative these Whitemen ye-want-to-kill?"*] hæˊˈiˈˈ thaˑˈriˋ ᵐbaˋ theˈˈiˈriˊ tˈæˋkiˊ ʾeˈˈnųˊŋ ʾįˋmbiˊ hæˑˈpąˋŋ riˈviˊ-ˈiˈkˈwoˈriˋ wiˈyeˈˈ sęˋnnæˋndiˋ næˊˈįˋŋ kˈeˊpˈiˊ pˈoˑkwįˋŋgeˊpiˈˈyeˋ ʾoˑvæˊŋ-hoˈˈoˋ [*That day indeed late all the-youths their horses mounting, two men these Whitemen to-a-lake took.*] ʾiˈweˈˈeˋ riˑˋ-poˈwaˊ ʾiˈheˑˈriˋ ʾoˑvæˊm-pˈoˑˈsųˑwæˋyǫ̨ˈŋ. [*There they-arrived when, they-dual-them-had-drink.*] ʾįˋŋ-kˈeˊpˈiˊ ræˋm-pˈoˑˈsųˑwæˋyiˈkˈuˊˈuˑ ʾiˈheˑˈriˋ nąˑˋįˋndiˋ ʾeˊ-kwæˋhwæˊriˑˋ. [*The-Whitemen dual-they-drank when, we we-dual-them-shot.*] ʾįˋŋ-kˈeˊpˈiˊ ʾeˑˈpˈǫ̨ˊŋxoˈwaˋyaˈweˑˋ. [*The-Whitemen we-them-scalped.*] heˈraˑ ᵐbaˋ pˈoˑˈkwįˊŋgeˈˈįˋŋgeˋ ʾiˊviˊ-ˈæˑˋ. [*And indeed around-the-lake we-ran.*] toˈˈwiˊ paˑˈreˊ nąˑˋ-mæˑˋndiˈˈiˑˋ ʾįˋm-pˈǫ̨ˊŋxoˈwaˋ ʾiˑˋ-xuˈyiˑˋ-hǫ̨ˈŋ. [*Whoever ahead going the-scalp he-it-in-his-mouth-had.*] ŋgiˑˋ-keˑˈhąˊn diˈheˑˈriˋ nąˑˋįˋmbiˊˈpiˈˈyeˋ ᵑgiˑˋ-weˑˈmæˑˋ. [*We-got-tired when, to-our-camp we-returned.*] ʾįˋŋ-kˈeˊpˈiˊ tcuˈˈįˋŋ ʾiˑˋ-pˈoˑkwįˋŋgeˋ ᵐboˈˈ eˑˋ-yoˈˈąˋŋ. [*The-Whitemen dead at-the-lake indeed we-dual-them-left.*] haˈˈwaˑˋ-ˈyąˋn nąˈˈįˋn teˈwaˋtˈoˈwaˋ ʾįˋŋ-kˈeˊpˈiˊ eˑˋ-ˈoˈwæˋŋ. [*That-is-the-way we Tewa-people the-Whitemen treated.*] næˑˈ ˈųˋwaˋ wiˈˈnˈtcæˋnųˑˋ. [*Now you I-it-to-you-throw.*]

2. God and Montezuma Hold a Shooting Contest

hæˑˋtˈæˋkiˊ piˈviˊ, kǫ̨ˈˈndaˊ, taˑˋaˊ, pæˑˈaˊ, tˈǫ̨ˈˈndaˊ, ˈųˊn-saˑˋ. [*All-kinds-of meat, buffalo, beef, elk, deer, antelope, he-had.*] heˈraˊ ᵐbaˋ yoˑˈsiˈˈ næˊˈiˈˈ piˈviˊ heˈraˊ ᵐbuˈwaˈyaˋ-weˈˈyaˊ heˈraˊ ˈąˊiˈyaˊ eˑˈ-kˈoˑˋ. [*And in-*

deed God this meat and paperbread and panocha ate.] he'ri' 'i''bo'wa'ri', yo·'si'' 'i'vi' fe'-'e·', 'i'-k^{y}e''ri' 'i'-hi·'ą'ŋ. [*And finishing, God his staff-of-chieftainship (lit. little stick) holding-in-his-hand, made-a-speech.*] he'ra' wi' me·'sa'' 'ba' 'ǫ'n-so'-γe'ri', 'bu'wa'a' pi'vi'ya' ka'fe·'ya' te·'ya' hæ·'-t'æ'ki' 'be·'ya', he'ra' p'o'se'ye'mų''^{w}a' 'i'vi' t'o'wa' ri'vi'-hų·'n^{y}ą'ŋ. [*And a-table indeed setting, bread, meat, coffee, tea, all-kinds-of fruit, then Montezuma his people had-eat.*]

he'ri' ri'vi'-hu·'''bo'wa'ri' p'o'se'ye'mų'' 'i'vi' t'o'wa', p'o'se'ye'mų'' nąʼ-mæ·'pi'ri'-'bo''o', 'o·'-pu''wa''ą'ŋ yo·'si'' ra'-mų·''į' 'o·'he·''a'kǫ'mpi''ye' we'n te·' nąʼ-tcą''ndi'-we''. *And they-finishing-dining Montezuma his people, Montezuma before-he-left invited God that-dual-they-should-go a-little-south a cottonwoodtree to-where-it-was-standing.*] he'-ri' rą'ŋ-wǫ''n^{y}į''į'ŋ 'į'n-te·''i'we''. [*And dual-they-stopped the-cottonwoodtree-at.*] yo·'-si''ri' p'o'se'ye'mų'' 'o·'-tsi'kąʼn^{y}į'ŋ: [*God Montezuma asked:*] "ha·'wį'nnąʼŋ 'ų'vi' k'u·'-fe' 'ų'm-mų·'?" kį'ŋ 'o·'-tsi'kąʼn^{y}į'ŋ. ["*Of-what-kind your weapon (lit. stone-stick) do-you-have?*" *thus he-him-asked.*] he'ra'-ha''a' p'o'se'ye'mų''^{w}a' yo·'si''ya' 'o·'-tų''ą'ŋ: [*And Montezuma God told:*] "'ų'vi'' pa·'re' wį'm-mų'ni'!" kį'ŋ 'o·'-tų''ą'ŋ. ["*Yours first you-me-show!*" *thus he-him-told.*] he'ri' yo·'si'' nąʼ-tų': [*And God said:*] "næ''į'nnąʼn nąʼ-mų·'", kį'ŋ 'o·'-tų''ą'ŋ. ["*this-way it-is*", *thus he-him-told.*] he'ri' yo·'si'' 'iv'i' kwæ'hwæ'ri' 'i'-hwa·'k^{y}e''e'. [*And God his gun took-out.*] he'ri' p'o'se'ye'mų'' 'o·'-tų'ą'ŋ: [*And Montezuma he-him-told:*] "nąʼ-kwæ'hwæ·' hæ·'-te·'pį'nnų'ri'!" [*Shoot yonder-at-the-middle-of-that-cottonwoodtree!*"] 'i'he·'ri' yo·'si'' 'i'-kwæ'hwæ'ri'. [*And God ook-a-shot.*] he'ri' 'i'-nąʼŋ 'i'-te·'pį'nnų'ri'. [*And he-hit in-the-middle-of-the-cottonwood-tree.*]

he'ri' yo·'si''ra' p'o'se'ye'mų''^{w}a': "'ǫ'ŋ-ki·'ya'mį'!" kį'ŋ 'o·'-tų''ą'ŋ. [*And God* (subject) *Montezuma: "me-show!" thus he-him-told.*] "nąʼ· wa''a' wi' ro'-mąʼ''ą''. ["*I also one bring.*"] pa·'re' 'a'a'ri' su'^{w}a'ri' 'i'-hwa'k^{y}e''e' p'o'se'ye'mų'' [*At-first bow and-arrows he-them-took-out Montezuma.*] he'ri' 'i'-thǫ'ŋ. [*And he-took-a-shot.*] he'ri' te·'pį'nnų'ri' 'ba' 'i'-nąʼŋ. [*And the-middle-of-the-cottonwoodtree indeed he-hit.*] he'ri' 'i'-hwa'k^{y}e''e' 'i'vi' tsi'γo'wæ'nų'. [*Then he-took-out his lightning.*] he'ri' 'į'n-tsi'γo'-wæ'nų' 'ba' t'æ'ki' 'i'-tæ''ą'ŋ. [*And the-lightning indeed everything shattered.*]

næ·' 'ų'wa' wį'n-tcæ'nų'. [*Now you I-it-to-you-throw.*]

3. The Girl and the Crow

næ''i'-'ą'n^{y}ų'ke·' 'ba' wi' hų''ų''e·' 'ų'ŋ-'æ·'ŋ. [*This-girl indeed a doll had.*] he'ri'-ho'' we·'mų' 'ba' wi' 'ǫ'ndo' 'i'vi' hų''ų''e·' 'ǫ'n-sæ'ŋk^{y}e''e'. [*And one-day indeed a crow her doll stole.*] he'ri' 'ba' 'i'-hų''ų''-e·'^{y}a' 'i'-'ǫ'ndo'ri' he·'caʼŋki' 'ba' 'ų'ŋ-k'-uγa'''. [*And indeed the-doll the-crow (subject) further-and-further indeed kept-putting.*] he'ri'ho'' we·'hæ·' 'i'-'ą'n^{y}ų'ke·' 'o'-ho''o' 'o·'-p'į'nnæ'''. [*And away the-girl he-her-took to-the-mountains.*] we'hæ·''ba' he'ri' 'o'we' ri'-po'wa' 'i'he·'ri' 'ba' rą'ŋ-xų·'po·'. [*Whereupon and there they-arrived when, indeed it-was-getting-dark.*] he'ri'ho'' 'i'-'ą'n^{y}ų'ke·' 'ba' we·'γe' 'i'yǫ'k'u·''i'ri' wi''i'-ca·'re'pi'. [*And the-girl indeed where to-sleep did-not-find.*] hę''bo' næ''i'-'ą'n^{y}ų'-ke·'^{y}a' 'ba' po'ye' t^{y}u''e' 'ba' næ·'-p'į'nnæ'' wę''ba'' 'ų'ŋ-yi''i'. [*And this-girl indeed three little-brothers indeed here-in-the-mountains somewhere had.*] he'ri' 'ba' 'i'-'ǫ'ndo'-ra' 'ba' næ''i'' 'ą'n^{y}ų'ke·' 'i'vi' hų''ų''e·' 'ba' 'i'-'ą'n^{y}ų'ke·' 'i'vi' t^{y}u·''į'mbi' te'hwa' 'ba' 'ǫ'n-ts'u're'', hę''bo' 'i'-'ą'n^{y}ų'ke·^{y}a' 'i'-te'hwa' wi'naʼtsu're''da''a'pi'. [*And indeed the-crow indeed this girl her doll indeed into-the-girl her little-brothers' house indeed put-in, but the-girl the-house did-not-wish-to-enter.*] "to''raʼŋ hæ·'te'hwa' 'i'vi' te'hwa'" 'i'-'ą'n^{y}ų'ke·' naʼ-tų'. ["*I-wonder-who that-house his house,*" *the-girl said,*] he'ri' 'ba' naʼ-the·' 'i'he·'ri' 'ba' 'i'-te'hwa''-'wie'ri' po'ye' 'e'nų'ŋ'e·'n^{y}æ·' 'o've'-mų''ų' ri'-pi·'. [*And indeed it-dawned when, indeed out-of-the-house three boys she-saw come-out.*] he'ri'ho'' 'i'-'ą'n^{y}ų'ke·' 'ba' 'i'-te'-hwa''i've' naʼ-ts'ų'ŋ. [*Then the-girl indeed*

into-the-house entered.] he·ri· 'o·ve'-hu'-yǫ'ŋ. [*And she-for-them-prepared-a-meal.*] he·ri· wi'ya' ną·-we·'pi·'. [*Then again she-went-out-again.*] ha''wa·'yą'ŋ po'ye· tha·'ri· 'i·-'ą'ŋ. [*That-way three days she-did.*] he·ri'ho'' 'i'ŋ-'e'nų'ŋ'e·'nʸæ· ᵐba· ri·-pi'tų'ŋ: [*And the-boys indeed began-to-say:*] "to''rą'ŋ ną·'i''ŋ ri'ŋ-hæ·'ha·''ą'mi' tha'mų'wa·." ["*I-wonder-who for-us fixes-dinner every-day.*"] he·ri· 'i·-tʸu·'ye'i'' 'i·-te'hwa'-'i'we·'ye' 'i·-wo'nʸi''ŋ 'i·-mų'ni'ri' to''rą'ŋ ną·''i'mbi' te·-hwa'i'we· ną·-ts'u'yą''ŋ. [*And the-youngest-of-the-little-brothers in-the-house stayed to-see who our house enters.*] he·ri· 'i·-'ą'nʸų'-ke·' ną·-we·'ts'u'ŋ. [*And the-girl came-in-again.*] he·ri'ho'' 'i·-'e'nų'ke·'ri' 'i·-'ą'nʸų'ke·' 'o'-tsi'ka'nʸi''ŋ: "to''ą'ŋ 'u'm-mų· to''ą'ŋ 'u·-vi' ta'ra' 'u'm-mų·'?" [*And the-boy (subject) the-girl asked: "Who are-you? Who your father is?*"] he·ri'ho'' 'i·-'ą'nʸų'ke·'ri' 'o'-tų''ą'ŋ to''wi' i'vi' ta'ra' 'u'm-mų·''i·. [*And the-girl she-him-told who her father was.*] he·ri· hæ·'wi' t'æ'ki' 'o'-tų'ką'mbo'wa· 'i·-he·'ri·, 'i·-'e'nų'ke·' 'o'-ᵐba''a·''ą'ŋ. [*And thing every he-her-finished-telling when, the-boy he-her-embraced.*] "pa·'re', ti wi'-'u'hą'ŋgi'nną'pi''ą'n nąvi' pa·'re' 'u'mų'? 'u·-vi' ta'ra' nąvi' ta'ra' wa''a' nąmų'". ["*Older-sister, interrogative do-you-not-know my older-sister you-are. Your father my father also he-is.*"] he·ri· ᵐba· hæ'we'ri· hą'ŋho'rą'ŋ ra·-hi'tcą'mmą·'. [*And indeed for-a-time accordingly dual-they-were-happy.*] he·ri· 'i·-'ą'nʸų'ke·' 'i'vi tʸu·'ri· 'o'-tų''ą'ŋ: "næ·'a'ho'' næ''i·-tse''e·'wi'n-yo·''ą'mi'. hę'-ᵐbo'' hæ·'wi' t'æ'ki' 'u'-k'o', i'wa'nąu'n-nąk'o'. ko·'yo·'ni' wi'-ną·-hu'yǫ'mpi', 'u'vi' fa·' t'æ'ki' wǫ'm-pa·''i'." [*And the-girl her little-brother (subject) he-her-told: "And-so-now this-little-dog I-you-shall-give. But thing every you-eat, likewise you-to-it-shall-feed. In-case it-does-not-eat, your fire all it-on-you-will-go-out.*"]

he·ri'ho'' 'i'we·'ye' ᵐba· wi' tcu'ye''i' 'u'n-te'hwa'k'o·' wa''a' ᵐba·. [*And there indeed a witch had-her-house also indeed.*] he·ri· 'i·-'e'nų'ke·'ya' 'i'vi' pa·'re' 'i'we' wi'-nąu·-mų''i'pi' wi'-nąu·-nda''a'pi'. [*And the-boy his older-sister there that-she-should-go he-did-not-want.*] hę'ᵐbo'' 'i·-'ą'nʸų'ke·' nąu·-fa·'kʸę'mmæ·' 'i·-tcu'ye''i'vi' te'hwa'i'we'' ha'ri'ho'' 'u'm-fa·'pa·'ri·. [*But the-girl had-to-go-to-get-fire the-witch's house-at, if the-fire-went-out.*] he·ri'ho'' we·'mų' 'i·-'ą'nʸų'ke·' 'i'vi' tse''e·' wi'-'o'-hu·'mæ'yi''-pi'. [*And one-day the-girl her little-dog did-not-give-anything-to-eat.*] he·ri'ho'' 'i·-tse''-e·'ri· 'ǫ'm-fa·'pa·'. [*And the-little-dog put-out-her-fire.*] he·ri· 'i·-'ą'nʸų'ke·' ho'' 'i·-tcu'ye''i'vi''pi''ye· nąu·-fa·'kʸę'mmæ·'. [*And the-girl accordingly to-the-witch's-place went-to-get-fire.*] 'i·-tcu'ye''i'vi' te'hwa''i'we'' nąu·-po'wa' 'i'he·'ri· 'i·-tcu'ye''i' nąu·-yo'k'o·'. [*The-witch's house-at she-arrived when, the-witch was-asleep.*] he·ri'ho'' 'i·-'ą'nʸų'ke·'ri' 'o'-fa·'sæ''mą'ŋ. [*And the-girl stole-fire.*] 'o·'-nąu·-pi·'mæ'ndi' 'i'he·'ri· 'i·-tcu'ye'i· nąu·-yo'sa''wo·. [*Coming-out-of-there when, the-witch woke-up.*] he·ri· ᵐba· 'i·-tcu'ye''i'ri· hą'ŋho'' 'i·-'ą'nʸų'ke·' 'o'-tų'ką'mmą·. [*And indeed the-witch accordingly the-girlwas-callingly the-girl was-calling.*] hę'ᵐbo'' ᵐba· i· 'ą'nʸų'ke·' ᵐba· nąu· wæ'mpi'ca' 'i'vi' te·-hwa''i'pi''ye·. [*But indeed the-girl indeed she-merely-ran-away her house-to.*] he·ri· ᵐba· 'i·-tcu'ye''i'ri· 'o'-xę'nca're''. [*And indeed the-witch she-her-chased.*] hę'ᵐbo'' 'i·-'ą'nʸų'ke·' 'ǫ'-fo·'ri'' t'i'ri'' he·ri'ho' 'i·-tcu'ye''i'ri· 'i·-'ą'nʸų'ke·' wi'-'o'-kʸe''e'pi'. [*But the-girl closed the-door and the-witch the-girl could-not-get.*] he·ri''ho'' 'i·-tcu'-ye''i' nąu·-t'e'ya'po·' he· 'i·-te'hwa'k'į''ŋge'ri· ᵐba· 'i·-so''yǫ'ŋ. [*And the-witch got-angry and by-the-outside-corner-of-the-house indeed she-urinated.*] he·ri· we·'ye' 'i·-tcu'ye''i' 'i·-so''yǫ'ndi'we'' t'æ'ki' ᵐba· 'a·'su·ʷa' si·'-ya' he'ra' po'vi''e·'ya'ri' ᵐba· nąu·-pi·'. [*And wherever the-witch urinated all-kinds-of indeed garlic, onions, and little-flowering-plants indeed came-up.*] he·ri'ho'' 'i·-tcu'ye''i' 'i'vi''pi''ye· nąu·-we·'mæ·'. [*And-then the-witch to-her-own-place went-back.*] he·ri· wi'ya' 'i''ą'nʸų'ke·' nąu·-we·'pi·' 'i'he·'ri· hæ·'-wi' t'æ'ki' 'i·-te'hwa'kį''ŋge·'ri· 'i·-so''yǫ'ndi' 'i·-mų''u·. [*And again the-girl came-out when, growing-stuff various by-the-outside-corner-of-the-house where-she-(the witch)-had-urinated she-saw.* he·ri· ᵐba· 'i·-si·'ya'

he'ra' 'a·'su·ʷa' ᵐba' 'i'-ho'ɣi'' 'i'vi' sæ·''i'we'' 'i'-wo·'ni'ri'. [*And indeed onions and garlics indeed she-gathered her stew-in to-put.*] he'ri' wa''a' 'i'vi' po'ye' tᵛu·''į'n ri'-'æ·'pi'riᵐbo''o' ᵐba' 'i'vi' tse''e·' 'o'-sæ·'hu'yǫ'ŋ he'ri' wi' pu''e·' ᵐba' nąˀ-po·'! [*And also her three little-brothers before-they-came indeed her little dog she-fed and a little-rabbit indeed it-became!*] he'ri'ho'' 'o'ku' 'į'ŋge'ri' ᵐba' nąˀ-ca'. [*And hills-to-the-side-of indeed it-ran-away.*] he·' 'o'we' 'i'-'ąˀnᵛųˀke·' 'i' i' tᵛu·''į'ŋ 'ųˀm-po'wa' 'i' he·'ri' ᵐba' wa''a' 'o've'-sæ·'hu'yǫ'ŋ he'ri' ri'-ⁿde·''e·ępa·'! [*And there the-girl her little-brothers came and indeed also she-them-stew-fed and they-turned-into-little-coyotes!*]

nąˀ-kį'ndi'po·' 'i'he·'ri' 'i'-'ąˀnᵛųˀke·' 'i''o'wį'ŋge'pi''ye' nąˀ-we·'mæ·'. [*This-having-happened when, the-girl to-the-town she-went-back.*] 'o·'-'o'wį'ŋge'' nąˀ-po'wa' 'i'he·'-ri' wi'ya' 'i'-tcu'ɣe''i' 'o'-we·'ca·'. [*To-the-town she-returned when, again the-witch (subject) she-her-found.*] he'ri'ho'' 'i'-'ąˀnᵛųˀke·'-ri' nąˀ-t'o·'tsi'ka''yi''i'. [*And the-girl was looking-for-work.*] he'ri' 'i'-tcu'ɣe''i'ri' ᵐba'-'o·'-tųˀyǫ'mbi''pi''ye' 'o'-pų'nᵛǫ'ŋ 'i'-to·'nųˀ-wæ''i'ri'. [*And the-witch indeed there-to-the-king's-palace she-her-sent looking-for-work.*] he'ri' 'i'-'ąˀnᵛųˀke·' 'o'we' 'i'-t'o·'ca'. [*And the-girl there found-work.*] 'i'-tųˀyǫ'-mbi''we'' 'i'-t'o·'mąˀ' 'i'he·'ri' 'i'-tųˀyǫ'nda'-ri' ᵐbà ąˀŋ-xo''nᵛa''a'. [*And at-the-king's-palace she-was-working while, the-king-(and-she) indeed dual-they-got-married.*]

he'ri' we·'mų' næ''i'-tųˀyǫ'ŋ he'ra' 'i'vi' sę'nnæ'n t'o'wa''į'nda'ri' ᵐba' nąˀ-hæ'mmæ·'. [*And one-time this-king with his men and-people indeed he-went-to-war.*] he'ri' 'i'vi' kwi·' 'i'-'ąˀnᵛųˀke·' 'i'vi' te'hwa''i'we' 'o'-yo''ąˀŋ. [*And his wife, the-girl, his house-at he-her-left.*] he'ri' wa'' 'i'-tųˀyǫ'n nąˀ-hæ'-ŋgi' 'i'he·'ri' ᵐba' we·'mų' 'i'-'ąˀnᵛųˀke·' wę'n te·' kwi''yǫ'nnų' nąˀ-'æ'ndi'we' ᵐba' nąˀ-xę'mpi·'. [*And also the-king he-was-at-war while, indeed one-time the-girl a cottonwoodtree a-ditch-near being indeed she-climbed.*] 'i'-k'wa'ye''' nąˀ-'æ·'ndi' 'i''ąˀnᵛųˀke·', 'i'-tcu'ɣe''i' nąˀ-p'o·'kᵛę'mmæ·'. [*There-up-in-the-tree being the-girl,* the-witch went-to-get-water. he'ri' 'i'-p'o·''i'we' ᵐba' 'i'-ąˀnᵛųˀke·' sa''wǫ''ndi''i' ᵐba' nąˀ-ki·'po''o'. [*And the-water-in indeed the-girl beautiful was-visible.*] he'ri'ho'' 'i'-tcu'ɣe''i' 'i'-mų''-ųˀ. [*And the-witch she-it-saw.*] he'ri' ᵐba' nąˀ-pi'tų''ųˀ: [*And indeed she-said-to-herself:*] "hi·'cu·', sa''wǫ''ndi''i' nąˀ-'o'-mųˀ, nąˀvi' p'ǫ'mbe·' rǫ'ŋ-xa'ye'' ki'ri' nąˀvi''pi''ye' 'o'-mų·''į'". [*Behold, beautiful I am, my jar (tinaja) I-it-shall-break whereupon, home I-shall-go.*] he'ri' 'i'vi''-pi''ye' nąˀ-mæ·' 'i'he·'ri' 'i'-p'o·'tsi'hwa'ye' 'i'-we·'mų''ųˀ. [*And home she-went when, the-mirror-in she-herself-again-looked-at.*] hę'ᵐbo''o' ᵐba' tcu'ɣe''i'kwi'yo'ts'æ'' ᵐbo'-ᵐba' wa''a'ri' nąˀ-mųˀ. [*But indeed the-very-old-woman-witch indeed still she-her-saw.*] he'ri' we·'ya' p'ǫ'mbe·' 'i'-we·'kᵛe''e' ki'ri' nąˀ-we·'p'o'kᵛæ'mmæ·'. [*And for-a-second-time a-jar she-it-got-again.*] he'ri' ᵐba' wi'ya' 'i'-'ąˀnᵛųˀke·' 'o'-p'o·''i'we'' nąˀ-ki·'po''o'. [*And indeed for-a-second-time the-girl in-the-water she-was-visible.*] 'i'we'' 'o'-mų''ųˀ. [*There she-her-saw.*] he'ri' 'i'-tcu'ɣe''i' wi'ya' hąˀmba' ᵐba' nąˀ-we·'-tųˀ'ųˀ: "hi·'cu·', nąˀ sa''wǫ'ndi''i' 'o'-mųˀ, nąˀ rǫ'm-p'ǫ'mbe·'xa've'' ki'ri' nąˀvi''pi''ye' 'o'-mų''į'. [*Behold, I beautiful am, I shall-break-my-jar whereupon, home I-shall-go.*] 'i'he·'ri'ho'' ᵐba' 'i'-'ąˀnᵛųˀke·' nąˀ-p'a'hwǫ'ŋ. [*And-*now *the-girl burst-out-laughing.*] he'-ri'ho'' 'i'-tcu'ɣe''i' ᵐba' k'wa'ye''' 'i'-ᵐbi' ki'ri' 'i'-'ąˀnᵛųˀke·' 'o'-mų''ųˀ. [*And-so the-witch indeed up she-herself-turned when, the-girl she-her-saw.*] he'ri'ho'' 'i'-tcu'ɣe''-i'ri' 'i'-'ąˀnᵛųˀke·' 'o'-tųˀ'ąˀ: "ha'ąˀŋ wi''-mbo''o' hæ·'ri' 'ų'-'æ'ŋ, wę'm fo''e·' rį'n-tcæ'nų' nąˀ 'o'-pi''i'ri' 'o·'-'ų'-'æ'ndi' 'o'pi''i'ri'". [*And-then the-witch to-the-girl said: "How alone there you-are! A hair me-throw I there-to-where-you-are that-I-may-climb!"*][1] he'ri' 'i'-'ąˀnᵛųˀke·' wę'm fo''e·' 'ǫ'n-tcæ'nų. [*And the-girl a hair she-her-threw.*] he'ri' 'i'-tcu'ɣe' 'i' ᵐba' 'i'-te·'

[1] Cata states that the old woman teller of the story paused here and explained that the girl thought it ridiculous that the witch wanted to climb on one of her hairs, but nevertheless threw her a hair.

nąˈ-caˑˈ ʔiˈ-ˈąˈnʸųˈkeˑˊ nąˈ-ˈæˈndiˈweˈˈ. [*And the-witch indeed the-cottonwoodtree climbed, the-girl to-where-she-was.*] heˈriˈhoˈˈ ʔiˈ-tcuˈɣeˈiˈriˈ ʔiˈ-ˈąˈnʸųˈkeˑˊ oˑˊ-foˈhwiˈɣiˈⁿdeˈˈeˈ ʔiˈheˑˈriˈ wẹˈm feˈˈeˑˈ næˑˊ-pˈǫˈmpiˈŋgeˈˈ ˈǫˈŋ-xæˈŋ kiˈriˈˈ, heˈriˈhoˈˈ ʔiˈ-ˈąˈnʸųˈkeˑˊ nąˈ-kˈoˈwiˈyeˈpaˑˈ. [*And-so the-witch the-girl she-her-a-hair-throwing when, a little-stick there-in-the-middle-of-her-head she-stuck-in when, then the-girl turned-into-a-turtledove.*]

heˈriˈ ʔiˈ-tcuˈɣeˈˈiˈkwiˈyoˈtsˈæˑˈ oˑˈ-tųˈyǫˈ-mbiˈ teˈhwaˈ ʔiˑˈ-piˈˈyeˈ nąˈ-mæˑˈ. [*And the-old-woman-witch there-to-the-king's house there-to-it went.*] ˈoˈweˑˊ nąˈ-poˈwaˈ ʔiˈheˑˈriˈ ˈįˈn-tˈoˑˊ-ˈįˈndaˈ nąˈ-xųˑˈnaˈˈndiˈ ʔiˈveˈˈ ˈoˈ-tsˈuˈreˈ. [*There she-arrived when, the-workers a-dark room they-her-put-into.*] ʔiˈtcuˈɣeˈˈiʸˈaˈ nąˈ-piˑˈtsuˈreˈⁿdaˈˈ ʔiˈ-nąˈ-xųˑˈ-naˈndiˈˈ ʔiˈveˈˈˈ ʔiˈ-tųˈyǫˈndiˈ oˑˊ-muˈnįˈpiˈriˈ. [*The-witch wanted-to-be-put-in the-dark room, the-king so-that-he-her-would-not-see.*] ʔiˈ-tcuˈɣeˈˈiˈ hæˑˈ-nąˈ-toˈˈændiˈ heˈriˈᵐboˈˈ ʔiˈ-tųˈyǫˈn nąˈ-poˈwaˈ. [*The-witch there-was-inside when, the-king arrived.*] hẹˈmboˈˈ ᵐbaˈ ʔiˈ-tcuˈɣeˈˈiˈ nąˈ-tsiˑˈheˑˈ kįˈn nąˈ-tųˈˈųˈ. [*But indeed the-witch had-sore-eyes, that-is-what she-said.*] heˈriˈ yaˈˈweˈ wiˈ-nąˈ-piˑˈⁿdaˈˈaˈpiˈ. [*And out she-did-not-wish-to-go.*] heˈriˈhoˈˈ ʔiˈ-tųˈyǫˈŋ ʔiˈ-tcuˈɣeˈˈiˈviˈ tsˈeˑˈ wiˈ-ˈǫˈm-muˈˈųˈpiˈ. [*And the-king the-witch's face he-it-never-beheld.*] heˈriˈ ʔiˈ-tųˈyǫˈŋ ʔiˈ-ˈąˈnʸųˈkeˑˊ nąˈ-muˑˈ ᵑgiˈn-nąˈˈ-ąˈŋ. [*And the-king the-girl was he-thought.*]

heˈriˈhoˈˈ weˑˊmuˈ wiˈ tųˈyǫˈmbiˈ tˈoˑˊˈiˈriˈ ʔiˈ-tųˈyǫˈŋ ˈoˈ-tųˈąˈŋ ᵐbaˈ “wiˈ kˈoˈˈeiˈˈeˑˈ hæˑˊ-ᵐbeˑˈxaˑˈᵐbuˈɣeˑˈˈ thąˈmųˈwaˈ nąˈ-poˈyaˈąˈŋ, heˈraˈ ᵐbaˈ saˈˈwǫˈŋ ʔiˈ-siˈtsæˑˈriˈˈˈ ᵐbaˈ kįˈn nąˈ-tųˈˈųˈ: [*And one-day a king's worker to-the-king said indeed: “A turtledove there-in-the-orchard every-day arrives and indeed beautifully it-cries”, indeed thus it-speaks:* “nąˈviˈ pˈoˈseˈhwaˑˊ nąˈviˈ puˈˈeˑˈ ʔiˈ-taˑˈtsąˈŋwæˈˈiˈˈiˈ riˈ-kˈoˈˈoˈ. heˈraˈ riˈ-pˈoˑˈsųˈwæˈⁿdeˈˈ ʔiˈ-pˈoˑˈpiˑˈˈiˈweˈˈ. heˈriˈ nąˑˈaˈ ˈoˑˊ-ˈoˈkuˈˈįˈŋgeˈ ˈoˈ-woˈwaˈyiˈˈi. ˈuˈˈ-uˑˈˈuˑˈˈuˑˈˈˈ.[2] [“*My little-coyotes, my little-rabbit the-green-grass eat and drink-water from-the-water-spring, and I there-in-the-region-of-the-hills live-wandering-about.* ˈuˈˈ-uˑˈˈuˑˈˈuˑˈ.”] heˈriˈ ʔiˈ-tųˈyǫˈndiˈ ˈoˈveˑˊ-tųˈˈąŋ reˑˊ-tˈoˑˈkwæˈˈæˈnʸuˈˈiˈ ʔiˑˈ-ʔiˈ-soˈɣẹˈ-ⁿdeˈˈiˈweˈˈ. [*And the-king he-them-told to-put-pinyon-pitch there-where-it-perches.*] heˈriˈhoˈˈ haˈn riˈviˑˊ-ąˈŋ. [*And-so thus they-did.*] heˈriˈ ʔiˈheˑˈthaˑˈ ʔiˈ-kˈoˈˈwiˈˈeˈ nąˈweˑˊpoˈwaˈ. [*And that-very-day the-turtledove again-came.*] heˈriˈ ʔiˈ-kwæˈ reˑˊ-ˈæˈnʸųˈˈiˈweˈˈ ʔiˈ-kˈoˈˈwiˈˈeˑˈ ˈoˑˊ-nʸaˈˈ. [*And the-pitch where-they-put, the-little-turtledove they-her-caught.*] ʔiˈ-tųˈyǫˈmbiˈˈpiˈˈyeˈ ˈoˑˊ-xoˈˈoˈ. [*To-the-palace they-her-took.*] ʔiˈ-tųˈyǫˈndiˈ ᵐbaˈ ˈoˑˊ-pˈǫˈmmąˈhwiˈⁿdeˈriˈ ˈįˈm-feˈkˈeˈˈeˈ ˈǫˈn-caˑˈriˈ ˈǫˈŋ-hwaˈkʸeˈˈ. [*The-king indeed rubbing-her-head the-sharp-stick finding he-it-pulled-out.*] heˈriˈ weˈseˈˈeˈ nąˈ-weˑˊtˈoˈwaˈpaˑˈ. [*And at-once she-turned-back-into-a-person.*] heˈriˈ ʔiˈ-tųˈyǫˈŋ ʔiˈviˈ kwiˑˈ ˈoˑˊ-weˑˊmųˑˊ-ˈųˈ. [*So the-king his wife he-her-again-beheld.*] heˈriˈ weˈsẹˈ-ᵐboˈˈ nąˈ-tˈeˑˈyaˈpoˑˊ ʔiˑˈ-tcuˈɣeˈˈiˈkwiˈyoˑˊ-ʷaˈriˈ. [*And at-once he-became-angry with-the-old-woman-witch.*] heˈriˈ ᵐbaˈ ˈoˑˊ-hwaˑˈ-piˈyeˈ ˈoˈweˑˊ nąˈ-toˈˈæˈndiˈweˈriˈ. [*And indeed they-her-dragged-forth from-there from-where-she-was-hiding.*] heˈriˈ ᵐbaˈ ˈįˈm-pˈoˈseˈhwaˑˊˈeˑẹ heˈraˈ ʔiˈ-puˈˈeˑˈ ᵐbaˈ ʔiˈtseˈˈeˑˈ ʔiˑˈ-tųˈyǫ ndiˈ nąˈ-muˈˈᵐdeˈˈiˈ ˈoˈveˑˊ-tˈoˈwaˈᵐbuˑˈnįˈ kįˈŋ ʔiˑˈ-tcuˈɣeˈˈiˈ ˈoˑˊ-tųˈˈąˈŋ. [*And indeed the-little-coyotes and the-little-rabbit, the-little-dog which-had-been; that-she-them-turn-back-to-people that-way the-witch he-her-commanded.*] heˈriˈhoˈˈ ˈįˈm-pˈoˈseˑˊ-hwaˑˊ heˈraˈ ʔiˑˈ-puˈˈeˑʸaˈ ᵐbaˈ wiˈyaˈ riˑˈ-tˈoˈwaˈpaˑˈ. [*And-so the coyotes and the-little-rabbit indeed again they-became-people.*] heˈriˈ ʔiˑˈ-tcuˈɣeˈˈiˈ ᵐbaˈ ˈoˑˊ-hwiˈˈąˈndiˈ yoˑˊ-nųˈˈˈ hæˑˈpąˈndiˈ ᵐbaˈ ˈoˈwįˈŋgeˈˈˈ tˈæˈkiˈ ˈoˑˊ-hwaˑˈmąˑˊ ˈoˑˊ-heˑˈpiˑˈˈweˈ heˈriˈ. [*And the-witch indeed they-her-hogtying, four horses indeed pueblo throughout they-her-dragged they-her-killed until.*] haˈˈwaˑˊɣąˈŋ ʔiˑˈ-tcuˑˈ-ɣeˈˈiˈ ˈųˈm-poˑˈ. [*That-is-what to-the-witch happened.*]

næˑˊ ˈųˈwaˈ wįˈn-tcæˈnųˈ. [*Now you I-it-to-you-throw.*]

[2] This last word imitates the call of the turtledove.

A NOTE ON TAOS K'OWENA *HORSE*

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In IJAL 10.149 (1944), G. L. Trager, while suggesting the possibility of an early borrowing from Spanish caballo *horse* as etymology for Taos k'owena [k'ɑwɛna], expresses doubts as to the validity of this assumption. The present note points out certain considerations which would tend to strengthen the assumption of such a borrowing.

Spanish caballo has been borrowed into a number of North American Indian languages, to the east, north, and west of Taos. The borrowings for which I have been able to obtain attestations are:[1]

Hitchiti: kawa·y-i (Haas, pc; -i is a noun suffix).

Osage: ka'-wa (La Flesche, BAE-B 109.82); attested in 1844 by Tixier as caoua (Travels 285, tr. Salvan, Norman, Oklahoma, 1940).

Karankawa: kanueiim (recorded 1688); kwa, kwan (1884); kuwa'yi, kuwa'i (1888; all from Swanton, BAE-B 127.128).

Southern Paiute: qava·-, qava''(Sapir, Southern Paiute Dictionary 632).

Hopi: kawaiyo (Titiev, IJAL 12.90).

Papago: kaviyu (Dolores, UCPAAE 20.23); 'kawiju (Kurath, pc); also attested for Pima, but without citation of linguistic form, by Herzog (Language, Culture, and Personality 69 [Menasha, 1941]).

Cahuilla: caballo (cited in Spanish orthography), used on the reservation in the mountains, beside tenil, probably originally *elk* (Kroeber, UCPAAE 8.238).

Yokuts: qawa·yo· (Newman, VFPA 2.168).

Miwok: kaβa·yu (Haas, pc).

Mono: qawayu? (Haas, pc).

Pomo: SE dialect kawai, all others kawaiyu, kawaiyo (Kroeber, pc).

Yukian: Yuki, Huchnom, Wappo kawaiyu; Coast Yuki kaviyu (Kroeber, pc).

Patwin: kawaiyu (Kroeber, pc).

Wintun: kōdit (Kroeber, pc).

Alsea: tawa'yu, tɬawa'yu (Frachtenberg, BAE-B 67.294).

Sp. caballo has also, of course, been borrowed into Mexican Indian languages, such as Tarahumara gawé (Bennett and Zingg, The Tarahumara 23 [Chicago, 1935]); Yaqui kába?i (Johnson, AA NS.45.341 [1943]); and undoubtedly many others for which I have no attestations.[2]

Two points are of interest in the above material:

1. Geographically, Taos is nearly in the center of the somewhat fan-shaped belt of borrowings of Sp. caballo in the South and Southwest of the United States. It is well within the outer limits of borrowing; caballo spread even beyond the area of close cultural

[1] This list is of course incomplete, for at least three reasons: 1) I have not been able to obtain material for all the languages of the Southwest and West; 2) a number of the published vocabularies do not include the term for *horse*; 3) even in instances where native terms for *horse* are recorded, the Spanish term may also have been in use but disregarded by investigators (as often happens in such situations; cf. Language 21.215 [1945], fn. 6).

For discussion and attestation of forms I am indebted to a number of Americanists, including Mary R. Haas, J. P. Harrington, A. L. Kroeber, Harry Hoijer, and William Kurath. The abbreviation pc, after the name of a person cited as source, means *personal communication*.

[2] In American Indian languages which did not borrow the word for *horse* from European sources, but formed new terms out of native linguistic material, the new words were formed chiefly on already existing names for draft animals or other large animals, such as (*big*) *dog* (Tunica, Chitimacha, Tonkawa, Kiowa, Dakota, Athabaskan languages), (*big*) *deer* (Muskogee, Choctaw), *elk* (Cahuilla), *elk* + *dog* (Kutenai), etc.

contact between Spaniards and Indians, e.g. to Osage[3] and Alsea.

2. Linguistically, there is no obstacle to assumption of a borrowing from Spanish for Taos k'owena. Trager (loc. cit.) states that, while the first part of the word, k'ow-, "is not too great a distortion in what is presumably an early loan, but the rest of the word doesn't fit". But caballo was shortened to a stem consisting of its first three or four phonemes in other American Indian languages, as in the Karankawa, Southern Paiute, Osage, and Tarahumara borrowings. The rest of the Taos word may represent an addition, to the stem k'ow-, of the morphological elements -we-na, parallel to their use in other animal, personal, and kinship terms.[4]

A further relevant point in cultural history is that Taos is very close to Santa Fé, one of the earliest points of diffusion of the horse in this region,[5] and is a logical point at which one might expect an early linguistic borrowing.

In short, assumption of Taos k'owena < Sp. caballo is justified on linguistic, geographical, and historical grounds. For definite proof or disproof, more specific information from earlier sources would be necessary; but, as has recently been re-emphasized,[6] in dealing with the undocumented past, one must accept probabilities because certainties are not available.

[3] Tixier attests another early borrowing from Spanish, combéra *to sell* (op. cit. 285), clearly from comprar *to buy*.

[4] Cf. material given by Trager, VFPA 6.215–6.

[5] F. Haines, AA NS.40.117 (1938).

[6] K. Malone, Modern Language Notes 59.185 (1944).

TWO NAHUATLAN TERMS FROM NORTHWESTERN SONORA

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Field studies in the District of Altar, Sonora, R. M. from 1928 to 1941 indicate that, despite a highly successful literacy campaign aided by the introduction of radios, some archaic terms, including a few of suspected Nahuatlan origin, are still in use by those inhabitants whose preferred language is Papago, but who, of necessity, speak either English or Spanish in their work environment.

Papago and its local variants is being displaced quite rapidly at present by Spanish and English; many Papago Indians taking great pride in their ability to speak both intelligibly.

Tepustete, the local name for a somewhat magical substance which indicates the presence of gold, silver, and lead ores, is believed derived from tepuztli-atle (Nahuatl: tepuztli *metal*, atle *instead of*). Samples of this material, on inspection, are found to be limonite, locally present in the form of gossan, and are the oxidized iron deposit found at the exposed outcrop of a sufide vein. In this area, gossan does usually indicate the presence of gold, silver, and lead ores. This term, with some local variants, is common in many parts of the Altar Valley. A Mexican variant, tepuzte, is sometimes heard.

Tlatol, a local generic term for any kind of a message, is an almost exact equivalent of the Nahuatlan term having the same meaning. It is currently combined with Spanish terms, to give special meanings. Carta tlatol *a letter;* dar tlatol *to deliver a message;* escribe tlatol *to write a letter.* Local variants are common, particularly as to usage. Tlatol U. S. Mail one cent *a penny postcard* is the most extreme example heard.

Certain other terms of Nahuatlan origin, such as coyote and chocolate, are not here considered, as they are used in their Anglicized or Hispanicized forms, frequently with "cowtown" pronunciation, even by the local Indians, and were almost certainly learned recently from Mexicans or Americans.

Clear evidence of contact between the Papago and the Nahuatlan-speaking cultures in the Valley of Mexico is lacking. Contact between the ancestral Papago and a group of Nahuatlan-speaking "late arrivals" who wandered southward down the Altar Valley "cientos y cientos y cientos años pasados, cuando siendo muchacho el buen Dios" (probably about 1,000 A. D.) is suggested by numerous "primer Montezuma" legends, which, however, have become confused with the doings of other culture heroes, such as Iitoi (eetah), coyote (an assistant God), and Santo Cristo. It is also possible that these terms were learned in the Valley of Mexico by various soldiers and priests, and were introduced into the peripheral regions by them.

ATAKAPA-CHITIMACHA *k^{w}

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1. The present note further develops the system put forward in Phonological Formulas for Atakapa-Chitimacha (IJAL 12. 113–32) principally by the addition of one more formula, namely original *k^{w} falls together with Atakapa w, Chitimacha k. As in the case of *k, the development in Chitimacha of an original syllable-final *k^{w} may be to k or h or zero according to what follows.

In support of the new formula, there is first of all the fact that it makes possible several new comparisons. Furthermore, it rounds out, and thereby makes more convincing, several of the comparisons of the original list. This applies in six cases where the original comparison was based on only the first CV of a CVC or CVCV stem, and where we are now able to include the second consonant. It is, of course, true that the second consonant is subject to contraction with following elements (see IJAL 12. 118) and a comparison that disregards differences in the second consonant may therefore nonetheless be valid. Still, the principle holds that the more complex the forms, the less probable is mere chance resemblance.

As further evidence of the earlier existence of a k^{w} phoneme, we have a peculiarity in the Chitimacha verbal endings for first person plural. Thus, we have full form naka, shortened form nuk, n-form nakun (compare singular hiki, hik, hikin). This naturally suggests an earlier relation of *nak^{w}a, nak^{w}, nak^{w}an, with change of vowel quality resulting under certain syllabic conditions. The development of the last form seems to be similar to that of the common contraction seen in pinun *red* from pinwa- plus -n.

The first of the new comparisons involves Atakapa iwal *shell*, Chitimacha kaš *clam*. The latter form is close to Natchez k^{w}a·š *mussel, shellfish*, with which it would seem related either by borrowing or common origin. The likelihood of earlier k^{w}, at least in Chitimacha, is greatly strengthened by this similarity, which seems too close to be accidental.

2. Here are the new comparisons involving *k^{w} (the numbering continues as in the first article):

241. *k^{w}al At. iwal *shell*, Ch. kaš *clam*. These forms should be eliminated, along with kancaw *hoe*, from comparison 9 (12.124), which then becomes simply *ʔūka At. uk *shell, oyster;* Ch. ʔukšču *oyster*.

242. *k^{w}awači E.At. wawašt, Ch. ka·či *owl*. We have no other cases of original *awa in a comparable position; the development in Ch. would be first to *aya, after which contraction to a· is not inconsistent with other developments.

243. *k^{w}oli At. wolšel *horned owl* (-šel not identifiable); Ch. kini *screech owl*. Normally *o gives Ch. e, but in some cases i is found (see 12.122).

244. *k^{w}a At. tuc wa *marrow* (tuc *leg*); Ch. katma *brain, marrow*.

245. *k^{w}aw At. waw *to call by name*, Ch. kow- *to call* (from *kaw-), kapš *name*. This comparison replaces 215.

246. *k^{w}ɛli E.At. wil, W. wol *eye, fruit;* Ch. kani *eye*. Also cp. At. kiw, ku *egg* and Ch. kapi *seed, grain*. This comparison corrects original 213.

247. *k^{w}ɔp, k^{w}ɔpsi At. oc, oci *up, top* (=woci ?); Ch. kap *up*.

248. *k^{w}ɔ (perhaps *k^{w}ɔn, k^{w}ɔnsi) At. won, Ch. kasi *dew*. If the Ch. is from *k^{w}ɔnsi, one would expect *ka·si (from *kahsi) on the basis of two examples cited 12.118 (left column).

249. *k^{w}i At. wi *me, I* (independent pronoun), -o *I* (verb ending); Ch. -ki *me, I* (verb ending). Also compare At. prefix hi- *me* and Ch. independent ʔiš *me, I*.

250. *k^{w}ik^{w} At. wiw, Ch. kima- *to believe* (Ch. from *kih-ma- with plural -ma).

3. The following are corrected entries to show *k^{w} as the second consonant of stems (the numbering is the same as in the first article):

27. *wek^{w}i, wek^{w} At. wewewš *to bark;* Ch. wehma- *to bark* (-ma- plural), wek- *to laugh.*

102. *čak^{w}i- W.At. akcaw, E. camps *cold, cool, chilly* (ak- perhaps *water*); Ch. ǰaki *cold.*

113. šek^{w}i At. hacewan *to forget* (hat- reflexive plus -šew- plus -an); Ch. šiki *to forget.* See 12.122 for comment on i for e.

118. *šok^{w}t At. šo *seed* (from *šow); Ch. šokt *pecan.*

177. *nak^{w}t At. nawš, Ch. nokt- *to allow.* The o-vowel in Ch. is either the result of this particular kind of syllabic position, comparable to the development before w, or is influenced by hokt- *to leave behind.*

199. *tek^{w}i E.At. štiw *sick*, Ch. teki- *to suffer pain.*

4. If we posit *k^{w} in a system that has non-glottalized and glottalized stops, we must also raise the question of the existence of a *k^{w}. However, the proportion of glottalized to non-glottalized is small in all instances and so we cannot expect to find any great number of examples. Actually, I have found only one case of At. w corresponding to Ch. g (glottalized k) and three showing At. w corresponding to Ch.ʔ:

251. *k^{w}ɔʔre At. wolwol, Ch. ʔapš ga·ye- *curly.*

252. *k^{w}il At. wil, Ch. ʔaʔišt- *to rock.*

253. *k^{w}aši At. waši, Ch. ʔašinǰada *old.*

254. *k^{w}i At. wi, Ch. ʔiš *me, I.* (But consider this in relation to 249, (*k^{w}i, At. wi, Ch. -ki.)

There are too few examples to draw any conclusions with confidence. As far as the quality of the comparisons is concerned, they all seem reasonably possible. The comparison of At. wi with Ch. ʔiš (254) does not necessarily contradict that of wi and -o with -ki (249) since the prototype language might have had *k^{w}i and *k^{w}i existing side by side, for example, under different accentual conditions or with different syntactic functions. As between the correspondence of At. w to Ch. g (251) and that of At. w to Ch. ʔ (252–4), it is possible that the former represents an old borrowing and the latter the original development.

5. Here are a few additional Atakapa-Chitimacha comparisons, not involving the problems discussed above:

255. *kekščit At. tokicit (<*to-kikščit), Ch. gakšjit *grasshopper.*

256. *ʔɔʔči E. At. oc, Ch. ʔa·či *beaver.*

257. *waš At. waš, te waš *leaf* (te old word for *tree* ?); Ch. či·š *leaf* (from *čiwš from *či-waš but *či probably not related to At. te).

258. *kay At. hat-kayiš- *to gird oneself* (hat- *self*, -iš- causative); Ch. kahčpa *belt.*

The last comparison suggests a correction in 14. Apparently syllable final y becomes h in Ch, and consequently 14 should be set up as *heyičin to account for the retention of y in Ch. heyǰi.

Number 196 can be reconstructed more fully as *mak, rather than *ma, since Ch. mandikte- could come from *mahndikte- from *mahnidikte-.

In connection with number 240, Mary R. Haas informs me that other languages of the same general area have forms like At. cikilik for *to tickle.* This makes very unlikely my suggestion of a borrowing from German (IJAL 12.132).

REVIEWS

MAPAS LINGÜÍSTICOS DE LA REPÚBLICA MEXICANA. Departamento de Asuntos Indígenas (México, D. F., 1944).

This review is a description of the book named, plus a statistical statement of the number and location of the speakers of each of the Indian languages of Mexico. The statistics are abstracted from figures contained in the work reviewed.

The publication is described in its introduction as "Mapas del coeficiente de la población de habla indígena con respecto a la población total, por Municipios, con base en el Censo General de Población de 1930." It was produced by the Department of Indian Affairs of Mexico, each map bearing the names of Isidro Candia, chief of the Department, Ramón G. Bonfil, chief of the Oficina de Economía, and Emmanuel Palacios, in charge of the Sección de Estúdios. These excellent maps are of great importance to linguists working in the area, whether for general reference, survey work, or detailed geographical study of the language groups.

The work itself is an atlas of Mexico, size 17 x 20½ inches, showing the location and number of speakers of each of the Indian languages of the Republic. It consists of a brief introduction followed by 27 full-page colored maps of 26 states and territories of Mexico, arranged alphabetically as follows: Baja California, Campeche, Coahuila, Chiapas, Chihuahua, Distrito Federal, Durango, Guanajuato, Guerrero, Hidalgo, Jalisco, México, Michoacán, Morelos, Nayarit, Oaxaca, Puebla, Queretaro, Quintana Roo, San Luis Potosí, Sinaloa, Sonora, Tabasco, Tlaxcala, Veracruz (2 maps), Yucatán. (The states of Aguascalientes, Colima, Nuevo León, Tamaulipas, and Zacatecas do not appear; presumably they have no significant Indian population.) The maps are marked with divisions according to municipalities or municipios, except for Quintana Roo and the Federal District which are divided by delegaciones, and Oaxaca which is divided by the larger divisions of ex-distritos.

A different color is used, in as far as possible, for each language; and different intensities of each color show the percentage of Indian population in relation to the total number of inhabitants above 5 years of age. The ratios indicated by color intensity are 1.01–20%, 20.01–40%, 40.01–60%, and 80.01% or more. Each municipio in which the Indian population exceeds 1% of the total is thus marked. For Oaxaca, it is each ex-distrito which is marked; in view of the importance of the languages of Oaxaca it is unfortunate that the information for this state could not also have been by municipios.

In the ample margin of each map the municipios (or other divisions) are listed in tabular form, showing the language or languages spoken and the number of speakers of each language in each municipio. For municipios with more than one language, the figures for each are given separately in the table. One can thus tell by a glance at the table which municipios have speakers of a given language, and conversely, which language or languages are spoken in a given municipio. The total Indian population of the state is then given, which includes all the languages in the municipios listed, plus the number of Indians in others having less than 1% Indian inhabitants. Totals for the specific languages, however, are not shown.

It may be observed in this connection that the census figures for 1930 showed, for each municipio in at least part of Mexico, not only the total number of Indian inhabitants but also the number of monolinguals versus bilinguals. Due to difficulties inherent in census taking and in defining bilingualism, such figures are at best only approximate. But their inclusion would have added to the

usefulness of this atlas, although admittedly requiring a more detailed set of tables than could conveniently have been accomodated by the format used. Such information, showing the centers and proportions of monolingualism, would at least have given some additional hints as to the location of linguistic centers and the present cultural status of each language. This material would be valuable both to linguists and to those engaged in Indian education.

The maps list 44 languages. The linguistic classification followed is one worked out by Miguel O. de Mendizabal and W. Jiménez Moreno and published in various forms prior to 1941.[1] The maps show 12 families with groups and sub-groups, and two unclassified languages. The following list is abstracted from the various maps, with reference numbers assigned to the specific languages by the reviewer.

Hokan Family
  Yuman-Seri Group
    (1) Cucapá, (2) Seri
  Subtiaba Group
    (3) Tlapanec
Yuto-Aztecan Family
  Nahuatlan Group
    (4) Nahuatl
  Piman Group
    Pima-Tepehuan Sub-group
      (5) Papago, (6) Tepehuan
    Cora-Huichol Sub-group
      (7) Cora, (8) Huichol (but Huichol appears in the Nahuatlan group on the map of Jalisco)
    Opata-Cahita-Tarahumara Sub-group
      (9) Tarahumara, (10) Cahita (Yaqui), (11) Cahita (Mayo)
Algonquian Family
  (12) Kickapoo
Otomian Family
  (13) Otomí, (14) Mazahua, (15) Pame, (16) Chichimeca
Matlatzincan Family
  (17) Matlatzinca
Tarascan Family
  (18) Tarascan
Totonacan Family
  (19) Totonac, (20) Tepehua
Popoloca Family
  (21) Popoloca (of Puebla), (22) Chocho, (23) Mazatec, (24) Trique
Mixtecan Family
  (25) Mixtec, (26) Amuzgo, (27) Cuicatec
Zapotecan Family
  (28) Zapotec, (29) Chatino
Zoquean Family
  (30) Zoque, (31) Mixe, (32) Popoluca (of Veracruz; written Popoloca in the atlas), (33) Huave
Maya-Quiché Family
  Maya Group
    (34) Maya, (35) Chontal (of Tabasco)
  Chol-Chorti Group
    (36) Chol
  Tzeltal-Tzotzil Group
    (37) Tzeltal, (38) Tzotzil, (39) Tojolabal
  Mam-Ixil Group
    (40) Mam
  Huasteco Group
    (41) Huasteco
  [Quiché-Cakchiquel Group] (listed on map by language only)
    (42) Quiché
Unclassified
  (43) Chinantec, (44) Chontal (of Oaxaca)

[1] One of these is a large map of Mexico by Mendizabal and Jiménez Moreno (México, 1937), showing the general distribution of Indian languages as based on the 1930 census. Two forms of their classification, as well as most of those made by other scholars from 1864 to the present, are summarized in Jorge A. Vivó, Razas y Lenguas Indígenas de México (Pub. no. 52, Instituto Panamericano de Geografía e Historia, México, 1941). Vivó gives separate maps of the linguistic classifications for Mexico as made by Orozco y Berra (1864), Pimentel (1865), García Cubas (1888), León (1902), Thomas-Swanton (1911), Lehmann (1920), Rivet (1924), Schmidt (1926), Sapir (1929), Kroeber (1933–34), Trager-Whorf-McQuown (1938), Mason (1939); to these should now be added Frederick Johnson's The Linguistic Map of Mexico and Central America, in The Maya and their Neighbors 88–114 (New York, 1940).

This classification is refreshingly conservative as compared to most other classifications of Mexican languages advanced during the last two decades, in that it makes no attempt to combine all the linguistic families into a half dozen or less major stocks. Several such stocks proposed by other scholars (e.g. a "Macro-Penutian" stock to include the Yuto-Aztecan, Mayan, Zoquean, and Totonacan families with Penutian of California) are so tenuous when judged by the comparative method as to be almost meaningless. What is needed is a rigid application of the comparative method, first within known families and only later extending to groups less obviously related. Until such time as this is done, a practical classification of the type made by Mendizabal and Jiménez Moreno would seem preferable. Even theirs, however, perpetuates certain supposed relationships which have never been proven, as for example the inclusion of Huave in the Zoquean family. This relationship was proposed by Radin in 1916[2] and taken more or less for granted ever since, but the data are far from convincing.

Each map is a unit in itself, and no type of statistical summary of the whole is given. The following resumé, computed by the reviewer from the tables in the atlas, shows the total number of speakers for each language and their distribution by states. (The total of 28,923 Indians listed for areas with less than 1% Indian population is not grouped by languages; if these were included the numbers for the languages would be slightly larger.)

(1) Cucapá, 112 in Lower California (plus 128, presumably Cucapá, in municipios with less than 1% Indians).

(2) Seri, in Sonora. Shown on map but no figures given, as this group was not included in the 1930 census.

(3) Tlapanec, 16,866 in Guerrero.

(4) Nahuatl, 664,283 total: 240,493 in Puebla, 128,855 in Veracruz, 96,114 in Hidalgo, 72,834 in Guerrero, 38,242 in San Luis Potosí, 27,799 in Tlaxcala, 25,665 in México, 15,209 in Morelos, 10,384 in Federal District, 5,170 in Oaxaca, 1,490 in Michoacán, 1,030 in Chiapas, 754 in Jalisco, 184 in Tabasco, 60 in Nayarit.

(5) Papago, 835 total: 495 in Sonora, 340 in Chihuahua.

(6) Tepehuan, 4,603 total: 2,626 in Durango, 1,557 in Chihuahua, 420 in Nayarit.

(7) Cora, 2,301 total: 2,191 in Nayarit, 110 in Durango.

(8) Huichol, 3,703 total: 1,708 in Nayarit, 1,672 in Jalisco, 219 in San Luis Potosí, 104 in Durango.

(9) Tarahumara, 26,649 total: 25,702 in Chihuahua, 881 in Durango, 66 in Sonora.

(10) Yaqui, 3,813 total: 3,105 in Sonora, 708 in Veracruz.[3]

(11) Mayo, 27,694 total: 19,850 in Sonora, 6,713 in Sinaloa, 1,131 in Chihuahua.

(12) Kickapoo, 346 in Coahuila (plus 421, presumably Kickapoo, in municipios with less than 1% Indians).

(13) Otomí, 215,138 total: 92,086 in Hidalgo, 85,179 in México, 16,548 in Querétaro, 7,332 in Veracruz, 4,435 in Puebla, 3,188 in Guanajuato, 2,943 in Tlaxcala, 1,685 in Michoacán, 1,024 in San Luis Potosí, 431 in Federal District, 287 in Morelos.

(14) Mazahua, 77,099 total: 70,971 in México, 6,128 in Michoacán.

(15) Pame, 1,695 total: 1,588 in San Luis Potosí, 107 in Hidalgo.

(16) Chichimeca, 437 in Guanajuato.

(17) Matlatzinca, 1,029 in México.

(18) Tarascan, 44,140 in Michoacán.

(19) Totonac, 91,157 total: 46,032 in Veracruz, 45,125 in Puebla.

(20) Tepehua, 3,129 total: 2,337 in Veracruz, 792 in Hidalgo.

[2] Paul Radin, On the Relationship of Huave and Mixe, AA 18.411–423 (1916).

[3] The isolated Yaqui groups shown for Veracruz are in the municipios of Tierra Blanca and Perote.

(21) Popoloca (of Puebla), 10,430 total: 8,306 in Puebla, 2,124 in Oaxaca.

(22) Chocho, 623 in Oaxaca.

(23) Mazatec, 55,670 total: 53,911 in Oaxaca, 1,759 in Puebla.

(24) Trique, 2,710 in Oaxaca.

(25) Mixtec, 169,709 total: 142,792 in Oaxaca, 18,086 in Guerrero, 8,831 in Puebla.

(26) Amuzgo, 8,240 total: 6,786 in Guerrero, 1,454 in Oaxaca.

(27) Cuicatec, 9,199 in Oaxaca.

(28) Zapotec, 213,525 total: 208,042 in Oaxaca, 3,893 in Veracruz, 1,118 in Tabasco, 472 in Chiapas.

(29) Chatino, 11,710 in Oaxaca.

(30) Zoque, 20,602 total: 15,179 in Chiapas, 5,111 in Oaxaca, 312 in Tabasco.

(31) Mixe, 31,940 total: 31,870 in Oaxaca, 70 in Veracruz.

(32) Popoluca (of Veracruz), 9,913 in Veracruz.[4]

(33) Huave, 4,079 in Oaxaca.

(34) Maya, 277,583 total: 241,748 in Yucatán, 31,229 in Campeche, 3,652 in Quintana Roo, 669 in Chiapas, 285 in Tabasco.

(35) Chontal (of Tabasco), 15,685 total: 15,617 in Tabasco, 68 in Chiapas.

(36) Chol, 17,013 in Chiapas.

(37) Tzeltal, 39,733 total: 39,535 in Chiapas, 198 in Tabasco. (The area allotted to Tzeltal includes that inhabited by the Lacandón group in Chiapas; Lacandón is not listed separately.)

(38) Tzotzil, 33,721 total: 33,527 in Chiapas, 194 in Tabasco.

(39) Tojolabal, 8,202 in Chiapas.

(40) Mam, 20,618 in Chiapas.

(41) Huasteco, 40,814 total: 22,431 in Veracruz, 18,067 in San Luis Potosí, 158 in Puebla, 158 in Hidalgo.

(42) Quiché, 785 in Chiapas.

(43) Chinantec, 24,418 in Oaxaca.

(44) Chontal (of Oaxaca), 8,290 in Oaxaca.

In calculating the above figures, the following discrepancies on the maps were noted: For Chiapas, the total found by adding all Indian groups, including those in areas less than 1% Indian, is 139,119; that given on the map is 139,532. For Chihuahua, the total found is 29,071; that given is 29,111. For Oaxaca, the total found is 518,512; that given is 518,812. For San Luis Potosí, the total found is 59,441; that given is 59,633. For Veracruz, the total found is 225,212; that given is 225,202. On the map of Sonora, the space for the number in municipios with less than 1% Indians is left blank; it should read 1,381, which is the difference between the total given for the state and the total of specific Indian groups listed.

The total number of inhabitants in all Indian groups shown on all the maps, including those in areas less than 1% Indian, is 2,249,164. The number found by adding the totals for each state as given on the maps is 2,250,099; the difference of 935 is accounted for by the discrepancies pointed out in the above paragraph.

It is stated in the introductory note to the atlas that the Department of Indian Affairs of Mexico is now working with the data of the 1940 census, and proposes to publish a set of maps based on this later information. It is to be hoped that such a work may soon be completed and made available to linguists.

The Mexican government is to be congratulated on this set of Mapas Lingüísticos. It is an interesting and a most useful work, and one which groups responsible for Indian affairs in the other countries of the Americas might well emulate.

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[4] This figure includes two isolated groups in Tihuatlán and Zongolica, with a total of 787 speakers listed as Popoluca (written Popoloca) of the Zoquean family. These are geographically nearer to the Popoloca of Puebla, and one wonders if they pertain to that language instead.

TLATELOLCO A TRAVÉS DE LOS TIEMPOS, VOLS. 3–7. A series of appendices in Memorias de la Academia de la Historia,

Vol. 3, No. 2—Vol. 5, No. 2 (Mexico City, 1944–46).

This review concerns a number of recently published Nahuatl texts from the 16th and 17th centuries. These materials are of significance to linguists, especially those in the Latin American field and those working with historical American linguistics.

Since 1944 a group of scientists has been conducting archaeological excavations in Tlatelolco, an old town within the present boundaries of Mexico City itself. The results of their investigations are published under the heading Tlateloco a través de los Tiempos, seven issues of which have come out to date. This group is also publishing, bilingually, old Nahuatl documents. Thus a number of hitherto unpublished texts are now available for Nahuatl students. These are listed below.

In Tlatelolco a través de los tiempos, volume 3: Deed of the sale of a house, dated 1612. Nahuatl text and translation into Spanish by R. H. Barlow and others.

In volume 4: Bull of Pope Paul V, dated 1612. Nahuatl text and old Spanish translation.

In volume 5: "Anales de la conquista de Tlatelolco en 1473 y en 1521." Old Nahuatl text kept in the National Museum of Mexico in the collection of José F. Ramirez. Translation into Spanish by Byron McAfee and R. H. Barlow.

In volume 6: The construction of the present church of Santiago Tlatelolco. Nahuatl text covering 1519–1633 and belonging to the above mentioned Ramirez collection. Only part of this manuscript is reproduced. Translation into Spanish by R. H. Barlow.

In volume 7: (1) War between Tlatelolco and Tenochtitlán according to the Codice Cozcatzin. The Codice Cozcatzin is an old Nahuatl manuscript, about 1572. Only part of this manuscript is reproduced; translation into Spanish by Byron McAfee and R. H. Barlow. (2) Testament of María Alonso; Nahuatl text of 1623 and old Spanish translation.

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UR- UND ALTINDOGERMANISCHE ANKLÄNGE IM WORTSCHATZ DES ESKIMO. By C. C. Uhlenbeck. Anthropos 37–40.133–48 (1942–45).

AMERICAN INDIAN LINGUISTIC WORK AND THE BOAS COLLECTION. By Zellig S. Harris. Library Bulletin of The American Philosophical Society for 1945, pp. 57–61.

STRAY NUMBER SYSTEMS AMONG CERTAIN INDIAN TRIBES. By Floyd G. Lounsbury. American Anthropologist 48.672–5 (1946).

ALPHONSE PINART AND THE CHINOOK JARGON. By Rena V. Grant. California Folklore Quarterly 5.277–97 (1946).

THE SOLUTION OF THE ISLAY PROBLEM. By Erwin G. Gudde. California Folklore Quarterly 5.298–9 (1946).

PECULIARLY DIFFICULT NAMES IN NORTH AND SOUTH AMERICA. By John P. Harrington. Acta Americana 3.217–20 (1945).

THE MEANING OF THE NAME "SONOMA". By J. N. Bowman. California Folklore Quarterly 5.300–2 (1946).

EL IDIOMA DE LOS COMECHINGONES Y SANAVIRONES. By Antonio Serrano. Boletín de la Academia Argentina de Letras 13.375–87 (1945).

For half a century, Uhlenbeck has searched for Indo-European elements in Eskimo and now publishes a revised list of about a hundred word-comparisons, in the hope that unprejudiced younger linguists will be stimulated to examine the whole problem more closely. Frankly, the procedure here followed does not give a clear impression of phonemic correspondences; this vagueness of formal relationships coupled with the uncertainties of semantic resemblances—however imaginative—leaves the reader with the question, whether the matter is worth pursuing at all, with present

materials and methods. This feeling becomes reinforced when Uhlenbeck calls attention to the Uralic element in Indo-European, piling Ossa on Pelion, in asserting that a part of the etymologies in Greenlandic he had discussed resemble some of the ones in Uralic, nay, Ural-Altaic.

Lydenberg had discussed the policy of the APS library regarding its collection of the Boas manuscripts (cf. IJAL 12.110–1, 181–2 [1946]). Harris outlines two desirable lines of further development: one proposes to develop research along the Pacific Northwest and in California; the other suggests that materials be obtained from the middle east states (i.e., in Algonquian, Iroquoian, and Siouan). He announces the preparation of a detailed catalogue and requests information concerning the various items. The possibilities of expanding the collection are discussed, as well as work in progress, and opportunities for publication, especially monographic.

Lounsbury compares a Non-Iroquoian system of counting to ten in Oneida with a similar tradition in Oklahoma Cherokee. A linguistic curiosity, the matter remains a historical puzzle as well.

Grant reprints Alphonse Pinart's Dictionnaire du Jargon Tchinouk of 1849, with an introduction discussing the activities of that ethnologist and collector. It would be interesting to compare these 596 entries with their later correspondents. Cf. IJAL 11.125–6, 225–33 (1945).

Following a suggestion by John P. Harrington, Gudde pursues the etymology of the islay *Prunus ilicifolia* shrub, tracing it to the Salinan. Islais Creek in San Francisco acquired its name as "a natural development" because the shrub was found there abundantly.

Harrington examines the etymologies of the following words: Eskimo, Aleut, Cree, Canada, Algonquin, Oregon, Mexico, Peru, Chimú, Quechua, Brazil, Paraguay, America. The author clarifies his problems by use of a technique he calls "parallelism," which "steps in to render probable what would otherwise remain forever only possible . . ."

Bowman discusses the name of the county of Sonoma in California. He calls attention to the distinction between Sono-ma and Sano-ma, the former in reference to the territory of the Suisun Indians under the leadership of Chief Nose, the latter, *valley of the moon*. Both words are from Suisun.

Serrano discusses the problem of the various languages spoken around Córdoba, especially from the point of view of the study of the language of the Diaguitas in 1936; this is followed by a note on the question of Pre-Hispanic Quechua, and another on connections with Cunza.

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